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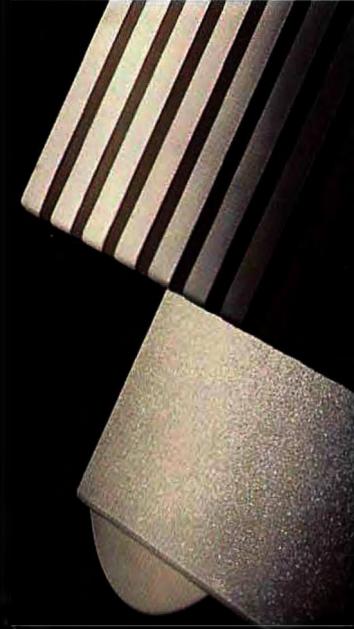
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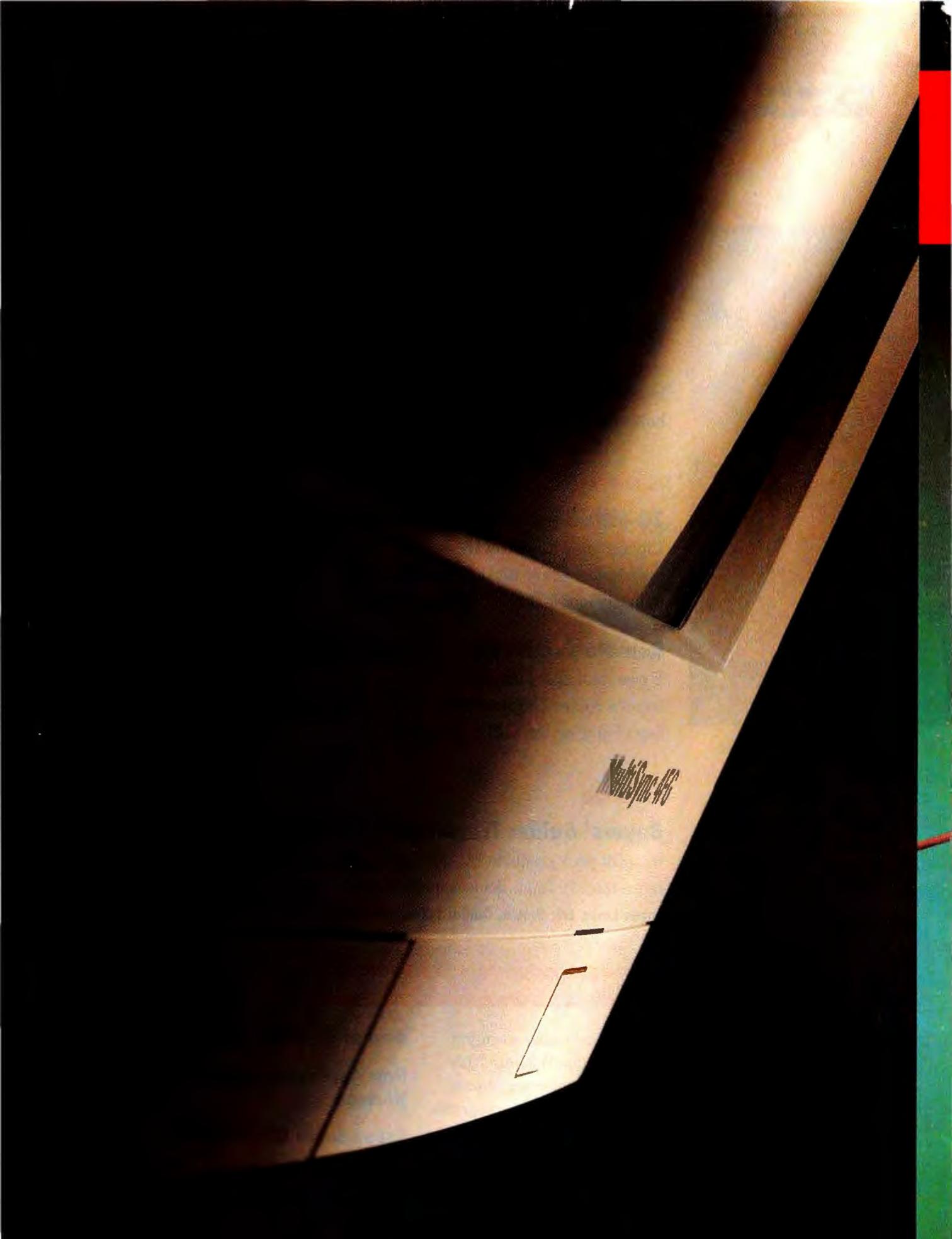
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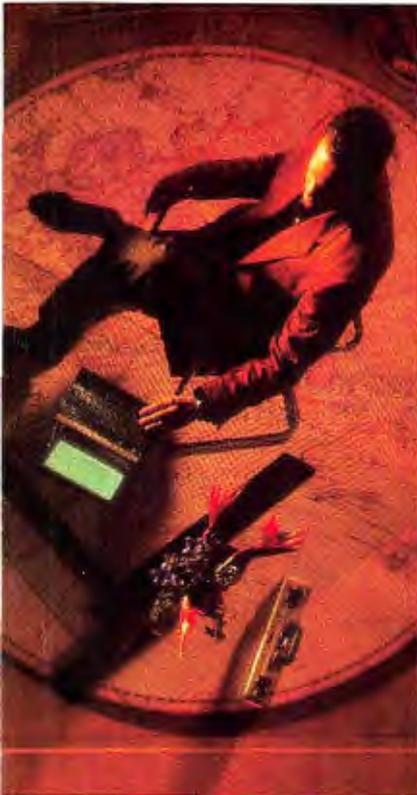


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20-MHz 386SX Notebooks
120

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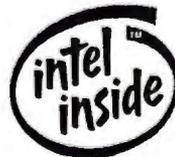
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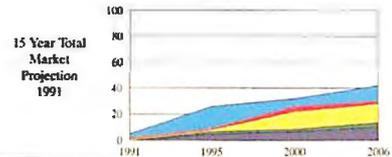
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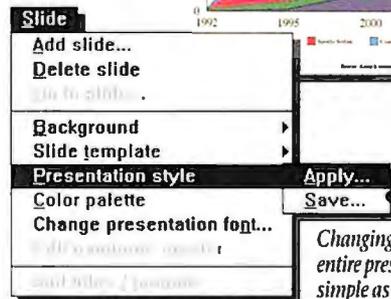
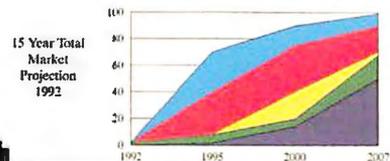
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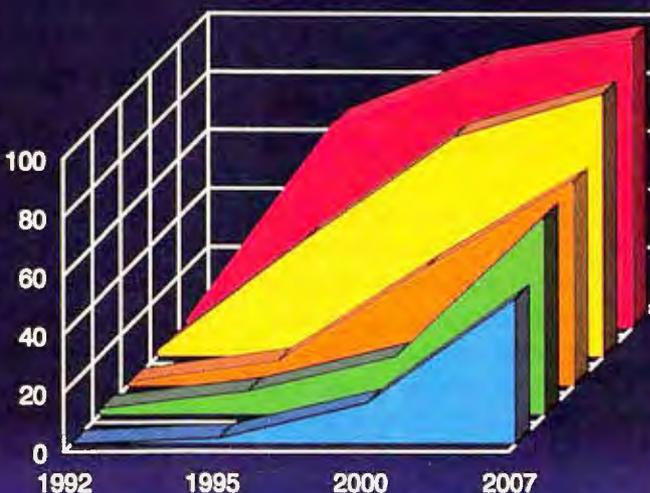
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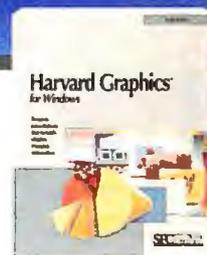


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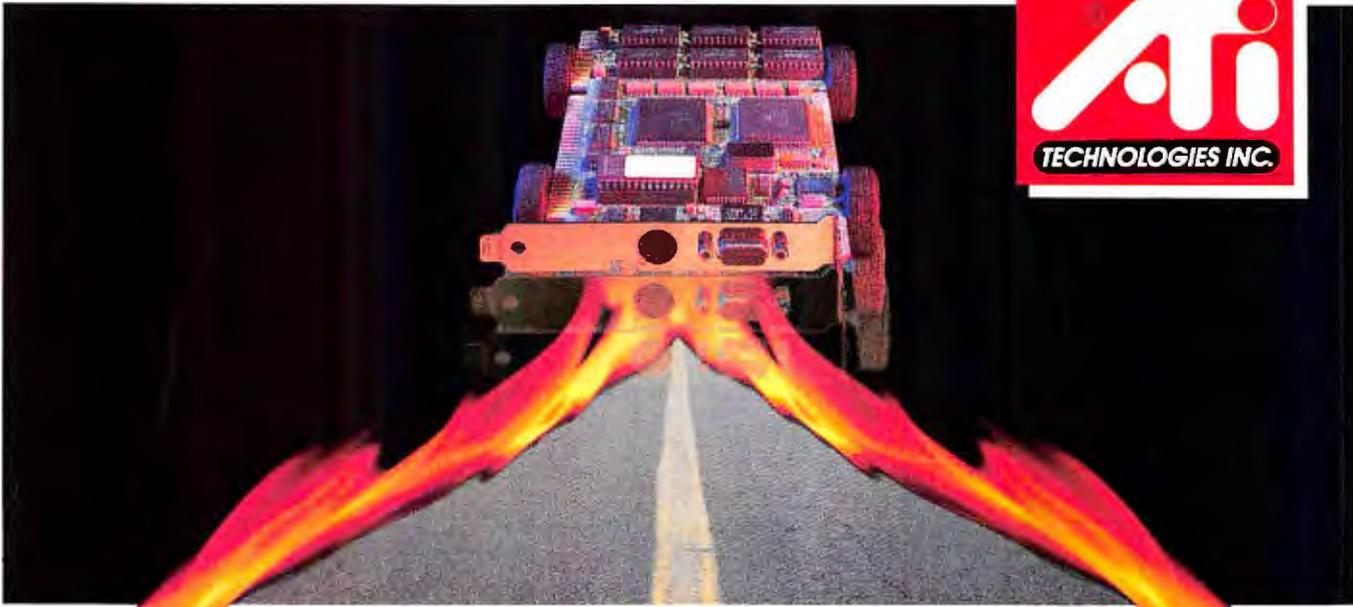
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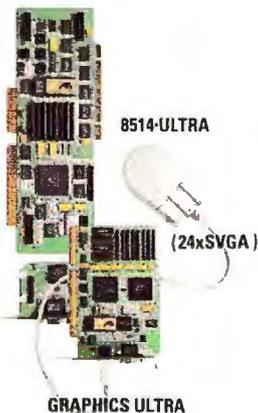
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Contributing Editor Robert Luhn stretches Windows 3.1 to its limits.

If you've had to choose between using your notebook and running *Windows*, you're not alone. *Windows* and notebooks make conflicting demands. Like most graphical operating environments, *Windows* needs lots of memory, mass storage, processing power, and display quality. Notebook computers, on the other hand, must exclude anything that stretches their dimensions beyond 8½ by 11 inches or adds the weight associated with large hard disks, power supplies, and CRTs. So it's hardly surprising that users often leave *Windows* behind when they hit the road.

Indeed, if anything has slowed the stampede to adopt *Windows*, it's the stampede to adopt notebooks. Some of the benefits of a standard graphical user interface vanish if you can't use it everywhere. And those notorious Unrecoverable Application Errors are particularly disturbing at 39,000 feet, when you don't know whether you're encountering solar storms, a *Windows* bug, or a "badly behaved" application. It's like the PC version of crossing the Bermuda triangle.

Take heart. The computer industry has worked full time to produce notebooks that run *Windows* comfortably, and Microsoft is putting the finishing touches on *Windows 3.1*, with greater reliability as one of the major goals. In this issue, our preview of *Windows 3.1* and several articles on portable computing show that now you not only can have it all, you can take it all with you.

Windows is already a de facto standard because more than 7 million copies have been sold. *Windows 3.1* will strengthen its top position with improved error trap-

Taking It All With You

ping. If your application crashes, it's probably just that one application, not *Windows* itself. While no one should call *Windows* fail-safe, it's now fail-resistant and therefore a much better traveling companion.

Several other major benefits come with *Windows 3.1*. Bundled scalable fonts improve screen readability and print quality. An improved File Manager and broader drag-and-drop availability should end your anachronistic dependence on the command line.

But your favorite applications and utilities are still tugging you back to DOS, right? Think again. You'd be better off moving everything onto *Windows* applications and utilities, because you can do so now without sacrificing your power and flexibility standards. Our special report on the best *Windows* software highlights great new applications on the horizon, such as *Quattro Pro for Windows*.

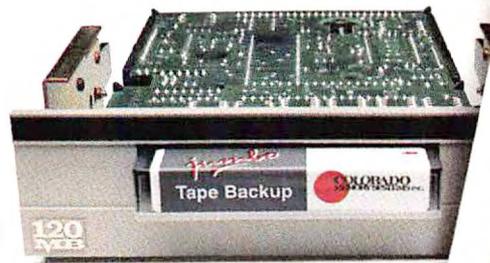
That leaves only one good reason for sticking with DOS: *Windows* is too big for a notebook. Wrong again. Our roundup of 23 notebook computers shows that most run *Windows* quite comfortably, thank you, right down to suspend/resume buttons that work when *Windows* is running. The Best Buy? Texas Instruments' TravelMate 3000 WinSX, though Zenith Data Systems' MastersPort 386SL has longer battery life and higher performance.

We also offer a review of seven remote communications packages, a Buyers' Guide to portable accessories—pointing devices, printers, fax-modems, and LAN adapters—and a feature cartoon depicting a day in the life of two traveling professionals. Why focus on luxuries like *Windows* and notebook computers in a time of recession? A standard GUI like *Windows* reduces training expenses, and notebook computers keep your employees as productive as possible on the road. ●

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Check out the new Jumbo 250, and the Jumbo 120. Both feature unprecedented reliability, easy installation, unattended backup, data compression, Novell® certification, UNIX®/Xenix™ support and QIC compatibility.

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Circle 46 on reader service card

Edited by RUSSELL GLITMAN

IBM Unleashes PC Group

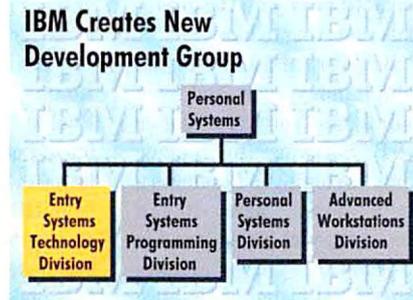
Observers Doubt Moves Will Spur Sales

With PC sales having shrunk 10 percent last year to below \$9 billion, IBM has loosed the reins on its Personal Systems Group in the hope that an independent business will respond faster to customer needs. But customers and industry observers doubt the changes are enough to accomplish a turnaround in sales.

Under the new arrangement, Personal Systems head James Cannavino will chair an executive committee that has worldwide responsibility for PCs. "This will give him more direct control over worldwide manufacturing, development, and pricing, and over time, he'll gain more and more autonomy," says a spokesperson for IBM.

IBM also will reorganize hardware development in a bid to speed product updates, which have lagged the market. A new Entry Systems Technology Division will concentrate on components such as hard drives and graphics adapters; the division should speed the rollout of products and upgrades, says Bob Carberry, assistant general manager for systems technology. Overall, Carberry adds, the restructuring aims to push decisions lower in the organization: "Now the buck stops here at the Personal Systems line of business."

Outsiders remain skeptical that forming another committee and splitting development into two groups will take care



Seeking shorter development cycles, IBM has formed an Entry Systems Technology Division.

of IBM's problems. Michael Goude of *Open Systems Advisor* in Boston suggests that IBM needs to follow Compaq's example and institute a radical overhaul of its strategies and product lines. "I want to see some activity beyond just changing offices or letterhead," Goude says.

"I certainly hope it works," says Bob Holmes, computer technology research analyst for Southern California Gas in Los Angeles. "They haven't been doing a very good job for the past couple of years. It's put-up-or-shut-up time for IBM." —Eric Bender

Did You Buy Your Products Here?

PC World has received more than four dozen consumer complaints about four Los Angeles-area mail-order businesses whose modes of operation strongly resemble one another. Customers complain about mail-order providers Computer Spectrum in Wilmington, One Stop Micro in Van Nuys, MinuteMan Computers in Costa Mesa, and American Computer Technology (ACT) in Garden Grove.

In all cases, customers report that they paid for products still not received after repeated calls to the companies or that they received incorrect or defective products. Some have been waiting since July to have orders filled or mistakes corrected.

All the firms conduct telephone sales from what appear to be retail computer outlets located in low-rent business strips. Despite their signage and appearance as retail operations, none carry any appreciable inventory or even product literature on site. All conspicuously exhibit a half dozen or so identical boxes labeled "Personal Computer—Frag-

ile." Employees said the boxes were empty. Although ostensibly competitors, all are credit referrals for one or more of the others.

A fifth company, Global Electronics of Culver City, California, processed credit orders placed with ACT, which has gone out of business. As of this writing, Global has not filled outstanding orders for ACT customers we contacted.

Minuteman Computers is also closed. All others except Computer Spectrum were locked during normal business hours when *PC World* visited them in mid-December. We nevertheless gained entry to Global Electronics, One Stop Micro, and Computer Spectrum, all of whose salespeople told us essentially the same thing: They offer the lowest-priced PCs, and orders will be filled "within a couple of days."

PC World has contacted each of these companies but could not find out when orders will be filled. If you are one of their customers, please write *Consumer Watch*, *PC World* with your experiences.

—Mike Hogan

Personal Communicators to Take Off

Traveling executives, who log little desk time, have searched largely in vain for ways to apply PC power to their unique situation. But their dream is about to be realized with the sudden availability of pagers, cellular modems, radio frequency (RF) devices, and many other wireless communications products designed to send and receive electronic mail, programs, and data files via palmtop and notebook PCs. Unfortunately, fulfilling the

dream doesn't come cheap.

One example of the new breed of personal communication enablers is Hewlett-Packard's Mobile Data Link, a cradle with built-in software that lets users outfit HP's 95LX palmtop with wireless communications devices.

Thus far, two companies have introduced add-ons for the Mobile Data Link. Motorola's News Stream pager receives E-mail and files, while Gessa's Global Positioning

System locates your exact longitude and latitude anywhere in the world. Expect to pay around \$1000 for the 95LX, Mobile Data Link, and one wireless device, says HP.

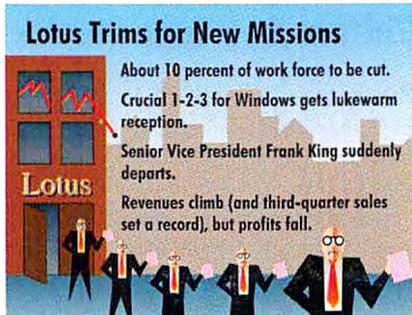
From Poqet Computer comes the Communicating Computer, which is a 2.2-pound version of Poqet's DOS palmtop that includes a Motorola RPM 400i radio modem. The Poqet Communicating Computer sends and receives data using the ARDIS radio network, which is an IBM-Motorola joint venture.

—Jeff Bertolucci

Plunging Profits Roil Lotus

The giant software firm is giving pink slips to some 10 percent of its 4200 employees worldwide—most of them located at its Cambridge, Massachusetts, headquarters. Sales, consulting, *Notes*, *cc:Mail*, and word processing are the only groups that will remain untouched.

Dwindling profits triggered the layoffs. Although Lotus expects 1991 sales to climb about 20 percent to slightly more than \$800 million, its income is down 32 percent for the first nine months.



Although sales remain strong, Lotus Development has cut staff and made major executive changes.

One cause, says Jeffrey Tarter, publisher of *Soft-Letter* in Watertown, Massachusetts, is Lotus's failure to streamline operations after its Samna and *cc:Mail* acquisitions.

Senior Vice President Frank King, who ran Lotus's core applications group, re-

signed in November, and several analysts suggest he took the rap for a buggy *1-2-3 for Windows*. King's departure was part of a general pattern: No fewer than ten Lotus vice presidents left last year, as chair Jim Manzi once again replaced nearly all the executives reporting to him.

But users and analysts hail John Landry, recruited from mainframe software leader D&B Software to replace King. "Bringing in Landry is a good move," says Ronan McGrath, vice president for information systems and accounting at Canadian Pacific Railways in Montreal, Quebec. "He has a very strong history

of being able to deliver to customers." McGrath maintains that despite such problems as the buggy *1-2-3 for Windows* release, "there's not a great chance we would walk away from Lotus—an individual product is just a blip in an ongoing relationship."

"A new Lotus is emerging," says analyst Steven Frankel of Adams, Harkness & Hill in Boston. "This is the de-IBM-ing of Lotus. Frank King and a lot of other executives came from IBM, and they built a big, structured organization with lots of vice presidents—but the PC application market today is a brutal street fight."

—Eric Bender

New MPC Multimedia Spec 86es the 286

Realizing that the 286 chip lacks the speed and memory features to handle multimedia effectively, the Multimedia PC Marketing Council—a group of 12 hardware and software companies promoting the MPC "standard" for PCs—has raised the minimum processor requirement for its specification to a 386SX.

According to Mike Grubbs, Tandy Corporation's senior director of marketing and MPCMC chair, the switch to the 386SX solves some thorny technical problems. "One was microprocessor bandwidth, and the other was memory management," Grubbs says. "The 386 family has some capabilities that the 286 doesn't have in that area."

Multimedia computing—incorporating sound, animation, and eventually, full-motion video—requires considerably more computing power and an advanced CPU architecture not available in

the 286, according to Grubbs.

The remainder of MPC's base specification remains unchanged and requires at least a CD ROM drive, 2MB RAM, a 30MB hard drive, VGA graphics, an audio card, a MIDI interface, and a mouse.

The upgrade to the specification makes things a lot easier for multimedia application developers. "You definitely need the 386 virtual memory in order to do acceptable multimedia," says Nancy Andrews, product manager of the new *Microsoft Works for Windows 2.0, Multimedia Edition*.

According to Paul Jain, CEO of Media Vision, a developer of multimedia upgrade kits based on the MPC specification, the IBM-Apple alliance, aimed in part at creating multimedia products, was a critical reason the council upgraded the specification.

"In the end, our competition is going to be Apple and IBM," Jain says. —Jeff Bertolucci

Prices Slashed on New Spreadsheets

Who's on first, what's on second, and will you ever pay full price for a spreadsheet again? Lotus is still on first, barely; Borland and Microsoft fight for second with new versions of *Quattro Pro* and *Excel*, due this quarter.

Forget list prices—including Lotus's record \$595 ticket on its new *1-2-3 for Windows*. Single-unit buyers can choose among \$99-to-\$150 competitive upgrades, deeply discounted bundling deals, "lite" versions like *Quattro Pro's* \$70 SE version, and add-on software premiums—even coffee mugs. Borland will set a new low this spring with a \$49.95 upgrade price on *Quattro Pro for Windows* and vows to maintain the pressure.

"The scale of the attack may change, the price may change, but the competitive upgrade is not going away any time soon," says Director of Product Marketing Neil Snyder.

Considering the stakes in the conflict, it's hard to imagine Lotus or Microsoft leaving that challenge unanswered. Even during the recession, the spreadsheet business grew 44

percent this past year, says International Data Corporation senior analyst Mary Conti Loffredo. Meanwhile, the unit share for *1-2-3* slipped about 10 points to 39.7 percent last summer, due mostly to Lotus's inability to get a working *1-2-3 for Windows* out the door. During that time, *Quattro Pro* and *Excel* climbed to 25 percent and 28.6 percent of sales, respectively. Lotus still enjoys the lion's share of revenues, but its position is threatened now that the firm is slugging it out with Borland and cash-heavy Microsoft.

Multidimensional worksheets, enhanced usability, and new levels of analytic power are must-haves for the new round of spreadsheets. But users say they're just as interested in a vendor's support and interapplication strategies.

"Price has been very important," says Mike Juhasz, general consultant at McDonnell Douglas Aerospace Information Services in Long Beach, California. "We are buying product, but we are buying company as well."

—Mike Hogan

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 **GREAT BATTERY FEATURES:** Every battery feature you want. You can plug your notebook in and "quick charge" the battery in less than one hour or you can "trickle charge" while in use. Plus, your battery easily snaps out allowing the quick installation of an optional replacement battery. It's great to be able to carry a light weight spare for those especially long trips. An optional battery charger stand is available as well.

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Reason #8

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Since? (Mo./Yr.) _____ Buy Rent Other _____

Previous Address _____

City _____ State _____ Zip _____

Employer _____ Since? (Mo./Yr.) _____

Monthly Gross Salary \$ _____ Daytime Bus. Phone (_____) _____

Previous Employer _____ From - To _____

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Relationship _____

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MasterCard	_____	_____	Other Major Charge Cards	_____	_____
Finance Company Loan	_____	_____			

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Joint Applicant's Name _____

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Address _____ Apt. _____

City _____ State _____ Zip _____

Home Phone (_____) _____ Date of Residence _____ (Mo./Yr.)

Joint Applicant's Employer _____ Since? (Mo./Yr.) _____

Bus. Phone (_____) _____ Monthly Gross Salary \$ _____

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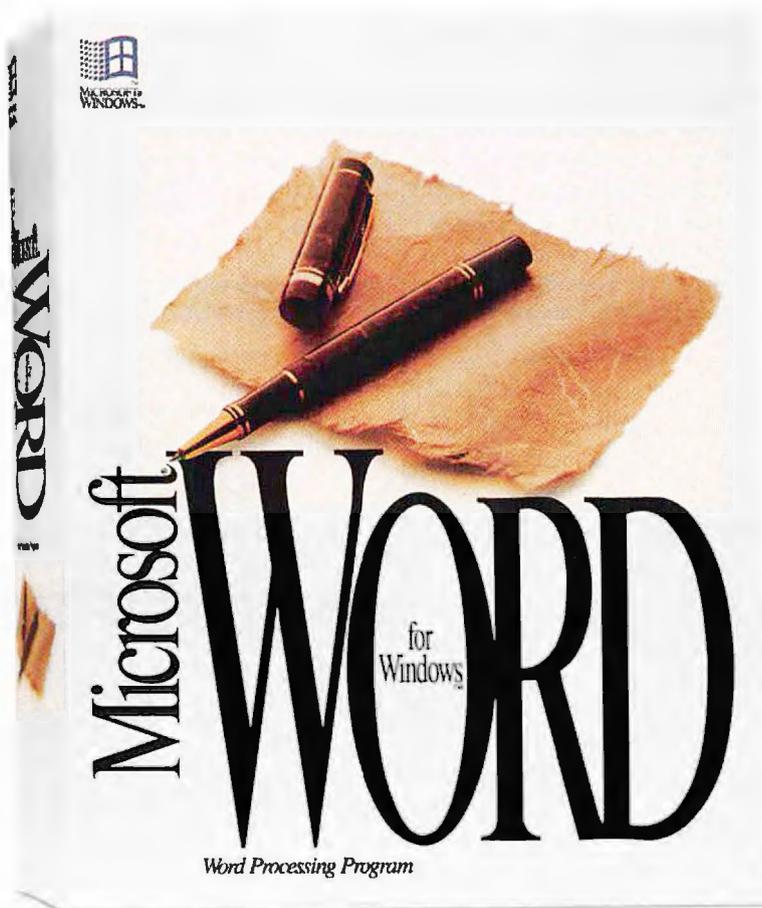
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PC WORLD

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Call (800) 323-3577, Ext. W93 to order Word for Windows version 2.0 directly from Microsoft or for the name of an authorized Microsoft reseller near you.

Microsoft

*As used herein, "DOS" refers to MS-DOS or PC DOS operating systems. **File conversions available for WordPerfect versions 5.1, 5.0, 4.2, and 4.1. †Plus freight and applicable sales tax. Offer good for current licensees of WordPerfect, Multimate, WordStar, MS Word for DOS and DisplayWrite. Allow 2-4 weeks for delivery upon receipt by Microsoft. Offer expires March 31, 1992. Limit one per customer. Reseller prices may vary. Call for system requirements. Offer good only in the 50 United States. © 1991 Microsoft Corporation. All rights reserved. Printed in the U.S.A. In the United States, call (800) 323-3577, Ext. W93. For information only in Canada, call (800) 563-9048. Outside the U.S. and Canada, call (206) 936-8661. Microsoft and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. WordPerfect is a registered trademark of WordPerfect Corporation.



LETTERS

Reactions and responses from the PC
World community

grams to market. Now every time I consider a new program, I wonder whether the enhancements will be worth the bug bites.

*Rodney T. Bellamie
Indianapolis, Indiana*

Another Painful Syndrome

Christine Whyte wrote an informative article about carpal tunnel syndrome (CTS) for November Consumer Watch. I want to let your readers know, however, that some people who think they have CTS are actually victims of myofascial pain syndrome (MPS). With MPS, the forearm or upper arm is usually the site of the pain, but it can also appear in the thumb or palm as with CTS. Besides pain and weakness, MPS symptoms include blanching, coldness, sweating, and swelling or goose bumps. Wrist splints may help with CTS, but they're of little value with MPS. Diagnostic awareness of this ailment is expanding, but people still frequently mistake it for CTS.

*Michael S. Margoles, M.D.
San Jose, California*

Taking the Right Posture to Avoid CTS

After reading Christine Whyte's remarks about the increased CTS risks associated with bent wrists while typing, I was glad for the tough posture training I had in the 1930s. The good typing habits I learned have stuck with me for a lifetime, and I've always kept my hands and wrists straight. Another important practice you didn't mention is keeping the fingers arched downward, which cuts down on errors and reduces hand fatigue. Years ago, we had only stiff manual keyboards, yet professionals typed as fast and as long as anyone does

today. On my first job, I typed five and a half days a week for six and a half years without developing any symptoms of CTS. Years ago, I never heard of a professional having this kind of pain. I suspect that bad posture is the main source of CTS in typists.

*James E. Taylor
Brighton, Michigan*

Buyers' Guides: Consultant's Consultant

As a computer consultant, I find your buyers' guides a great help. Recently, for example, a client was looking for a 286, and I was having trouble finding one that fit his tight budget. While searching, I got your August issue with its "Buyers' Guide: 286 Systems." I was able to show him information on more than 70 12-MHz and 16-MHz systems, and we selected one in his price range. Then we picked out a printer from the printer buyers' guide in the same issue. Thanks!

*Brian T. Bannon
Mattituck, New York*

Low-Cost CAD Contenders

I just finished reading your October "Buyers' Guide: Low-Cost CAD," and I think you missed a good bet on the excellent, low-cost NorthCAD-3D 8.2 from The Quest Co., 3117 W. Holland Ave., Fresno, CA 93722; 209/222-5301. This \$80 program has enabled me to design a number of fairly technical mechanical parts and fit them together as a completed assembly. Perhaps a more costly program would give me slightly more capability, but as far as I'm concerned, the substantially higher price wouldn't be worthwhile.

*Greg Bethards
Sunnyvale, California*



ANDREY SHACHAT

Users Getting Bugged

Thanks for giving attention to the bugs that infest many first software releases. Your November Industry Outlook report ["As Software Advances, Bugs Still Remain"] presents both sides of the story, but I don't buy the vendors' argument that today's major releases in general have fewer bugs. Of three purchases I made recently, only DOS 5.0 functioned flawlessly. The other two packages—a font scaler and a backup program, each published by a well-known house—gave me problems. After wrestling with the "improved" versions of my old favorites, I felt as if I'd paid money to become a beta tester! Both vendors ultimately sent bug fixes, but I wish publishers wouldn't rush their pro-

ANTHONY RUSSO



Their Point Sizes.

You Could Buy An Printer. But There'



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8 10 12 14 16 18 20 22 24 26 28 30 32

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It will make anything else seem, well, pointless.



EPSON



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Dot Matrix



Notebooks



Lasers



Servers

I was delighted to read your "Buyers' Guide: Low-Cost CAD," which listed many more products than I knew existed and included a features comparison with AutoCAD. The information on the programs, contacts, and prices and the postage-free reader service card [for additional information from vendors] were well worth the price of the issue.

But I was disappointed that the article didn't offer the same kind of in-depth evaluation and discussion that appeared in the same issue's review of 25-MHz 386 PCs. I wish you had included information on comparative speeds and the look and feel of the programs.

*Bernard Echanow
El Toro, California*

When we review a group of products, we test and evaluate each one in depth and rate it against the others. Then we make product-specific buying recommendations. With buyers' guides, we increase our breadth of coverage and give information on a wider range of products. While we don't undertake hands-on testing or recommend specific products, we supply general purchasing advice, contact information, and features comparisons. —Ed.

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New Guinness Multimedia Record

We were disappointed to see William Rodarmor's report on the former version of Guinness Multimedia Disc of Records in your November "Buyers' Guide: CD ROM Software." As the developer, along with Britannica Software, we want to let PC World's readers know that a new, MPC-compatible version is available that includes music and sound from more than 70 world-record holders. Both the DOS and Windows versions have completely corrected the deficiencies Mr. Rodarmor criticized: We are using improved search and retrieval software, and we now include more than 300 full-color VGA photographs. For more information, call Britannica Software at 800/533-0130.

*Chris Andrews
UniDisc
Capitola, California*

Multimedia Authoring Addendum

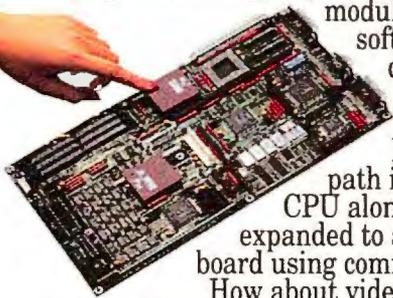
Dan Miller did an excellent job in his November "Buyers' Guide: Multimedia Authoring Software," but we at Ntergaid were disturbed that our HyperWriter wasn't mentioned. Aimed at the low-end developer, HyperWriter features multiple links for text, graphics, audio, video, and animation. You can create multimedia documents easily with its word processor-like interface, and you can import ASCII and WordPerfect files, PCX, and GIF graphics, and FLI animation files. The program also supports major sound and video boards. In

Performance That Improves With Age.

The world of tomorrow is full of uncertainty. Your business, your competition, the economy and certainly computer technology. The AcerPower 486SX personal workstation is one of the safest paths you can take to the future...because Acer is the company behind it.



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At a price of \$2,495* the AcerPower 486SX is an exceptional value. We've included MS-DOS® 5.0, Microsoft® Windows™ 3.0 and PS/2®-style mouse. Along with much more to get you started.

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Circle 3 on reader service card

addition, HyperWriter has navigational tools, on-screen fonts, and style sheets. Our Windows version should be available by the beginning of 1992.

Gary G. Greenlees

J. Scott Johnson

Brian C. Giedt

Ntergaid

Fairfield, Connecticut

Sorry we missed HyperWriter! For more information contact Ntergaid, 2490 Black Rock Tnpk. #337, Fairfield, CT 06430; 203/380-1280, 203/380-1465 (fax). —Dan Miller

Backtracking on Tape Backups

Thanks for the excellent large-capacity tape backup Buyers' Guide in Decem-

ber. *PC World* is the very first publication we've read whose editors clearly understand the difference between the QIC-40/80 and Irwin proprietary Servo formats and explain the importance of backward compatibility and proven upgrade paths. These factors are often overlooked when publications recommend that corporate buyers go out and purchase QIC-40/80 drives without considering their already-existing backup equipment. I did notice a few inaccuracies in your table listings for our new drives, however. Irwin provides a 24-month warranty with the AccuTrak Plus 250, and the Standard 250 works with a high-speed controller. And each drive is built on a 3½-inch form factor and fits in 3½-inch or 5¼-inch bays.

Doug J. White

Irwin Magnetic Systems

Ann Arbor, Michigan

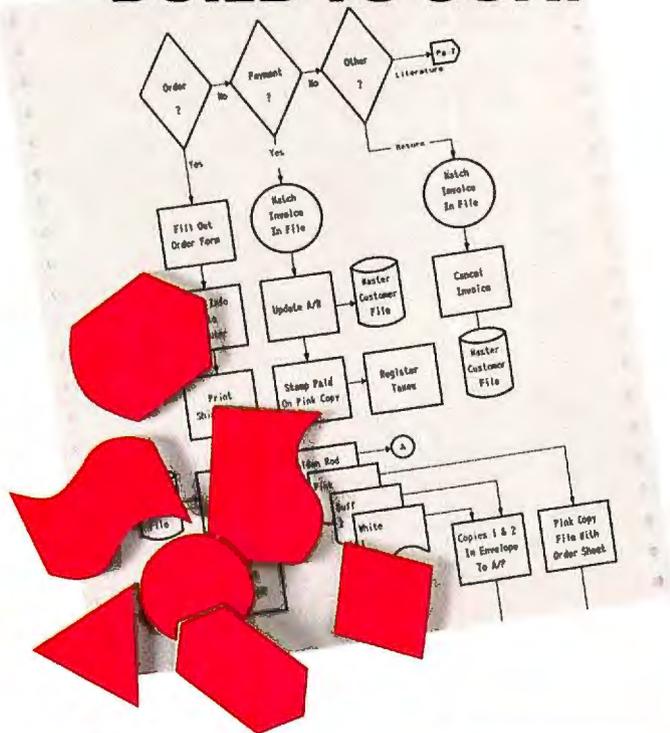
Corrections and Clarifications

Our December high-speed modem buyers' guide should have stated that the Hayes Optima 96 and the Telebit QBlazer each have V.32. On the other hand, the SupraFaxModem V.32bis has V.32bis, and the SupraFaxModem V.32 does not.

Our November "Buyers' Guide: Hand Scanners" included some incorrect information about the KYE International scanners. The GS-4500, GS-B105G, and GS-C105 Plus have a maximum scan size of 4.1 by 14 inches and all have a one-year warranty. The GS-C105 Plus does have a real-time display of scans. It also supports 256 shades of gray, 4096 colors at 200 dpi, and file-format compatibility with TIFF, PCX EPS, MSP, CUT, and IMG. *PC World* regrets the errors.

Send your reactions, responses, and ideas to Letters, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI MAIL PC World Editorial; or 415/442-1891 (fax). Include your name, city and state, and phone number. We reserve the right to edit letters. ☺

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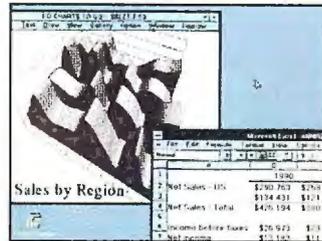
Or if you prefer, you can choose our 9.5" diagonal LCD display, the most state-of-the-art LCD available, with uncompromising clarity from the black and white ultra thin screen.

Both offer a 640 x 480 VGA high-resolution display as well as the graphic versatility of 16 gray scales for the gas plasma screen and 64 gray scales for the LCD screen.

For familiarity and ease of use, the T4400SX has a full-function keyboard with standard size keys and key spacing.

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And for added expandability and connectivity, there are built-in parallel, serial, video, keypad/board, mouse and bus expansion ports. There's even



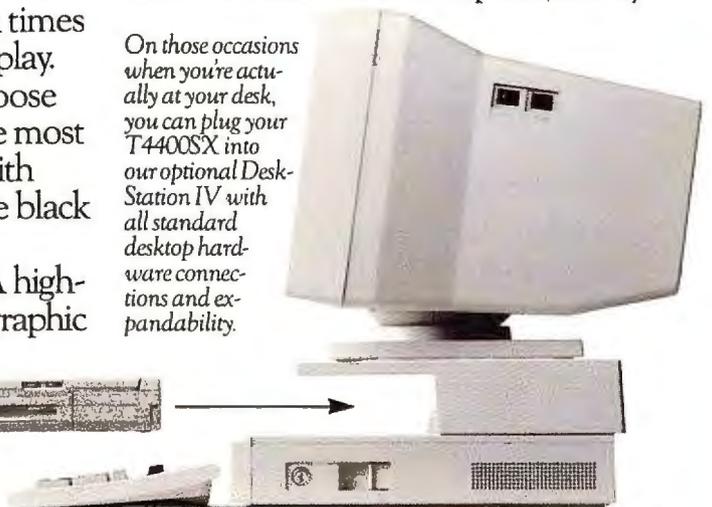
If you choose the 9.5" diagonal LCD display, you get the versatility of 64 gray scales as well as high-resolution 640 x 480 VGA on the black and white ultra thin screen.

a dedicated modem slot for an optional internal cellular-ready, 9600 bps fax or standard modem.

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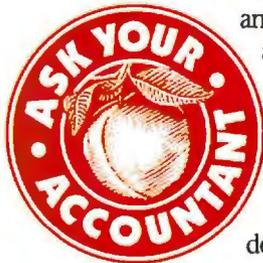
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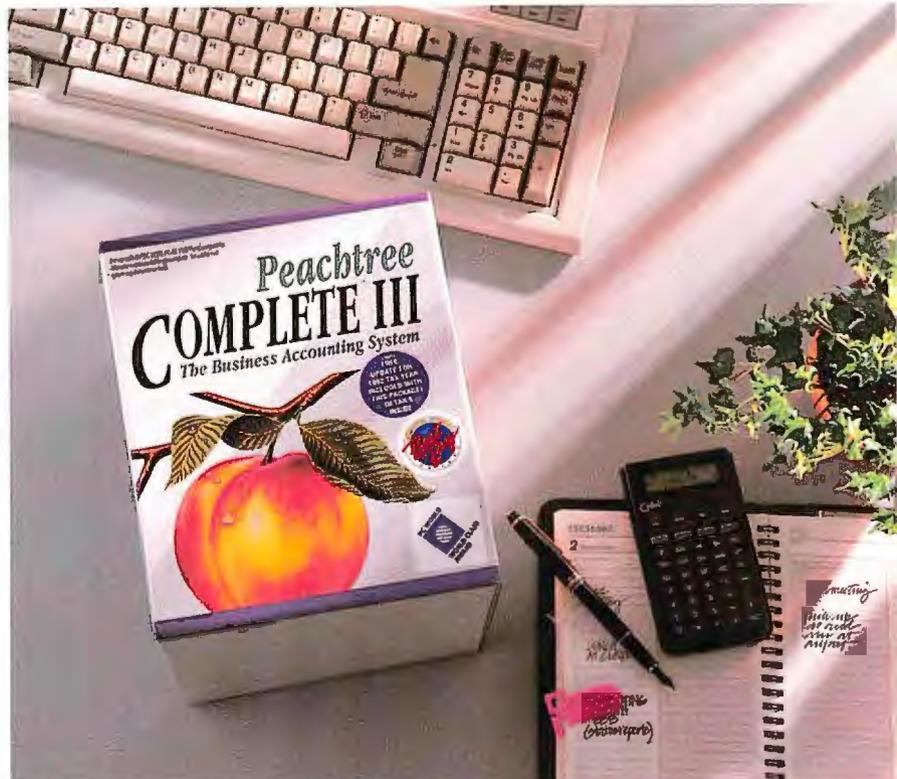


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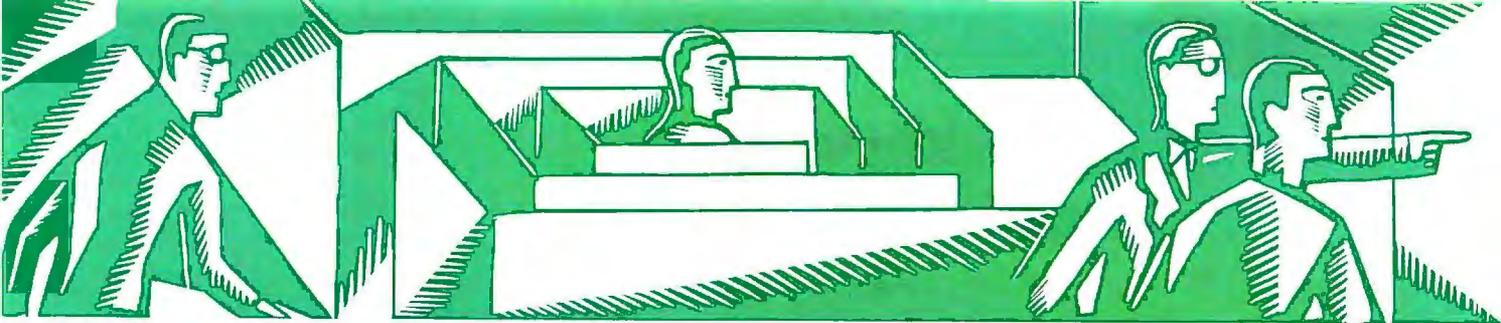
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Circle 144 on reader service card



THE HELP SCREEN

PC World offers answers and advice at every level

Karl Koessel and Robert Lauriston

Dvorak Keyboards Spell Speed

Q. *I've occasionally read references to a "Dvorak" keyboard that supposedly speeds up touch-typing. Does it? If so, where can I get one?*

*Ruth Jones
Vancouver, British Columbia,
Canada*

A. A Dvorak keyboard speeds you up by not slowing you down. When used by fast typists, early typewriters tended to jam. The now-ubiquitous "Qwerty" keyboard was developed to avoid this problem. It made common letters like *E*, *I*, and *O* harder to reach to slow the typist to a speed the machine could handle. In contrast, a Dvorak keyboard makes the most common letters the easiest to reach. Many people find this gives them a speed boost—though switching can be hard.

You don't need to buy a new keyboard to switch to the Dvorak layout; you can simply reconfigure the one you have. For *Windows* and *Windows* applications, you just open the Control Panel's International dialog box and change Keyboard Layout to *US-Dvorak*. For DOS and DOS apps, you need a keyboard

redefinition utility. While you can set up the Dvorak layout using almost any macro program or even ANSI.SYS, it's easier to use the shareware *DvorakKB*. This 1.5K memory-resident program also lets you hot key between Dvorak and Qwerty layouts—handy if you share your computer.

Once you've reconfigured your keyboard, you'll probably want to rearrange its key caps. With most keyboards, you can just pull off the caps and rearrange them as in **FIGURE 1**.

WHERE TO BUY

DvorakKB
FAB Software
P.O. Box 336
Wayland, MA 01778
508/358-6357
LIST PRICE: \$21 (5¼ inch), \$22 (3½ inch)
Reader service no. 668

Smart Headings for Quattro Pro

Q. *I read the October "Smart Footers" item that told how to include the current path and file name in 1-2-3 print-outs. Though Quattro Pro 3.0 has the same @CELLPOINTER function, it won't accept the "filename" attribute.*

Do you know of another way to display the current file name in Quattro Pro?

*Mona Baumgartel
Bali, Indonesia*

A. The current release of *Quattro Pro* can't automatically print the current file name in a footer. Borland is likely to add this feature in the future; for now you can use the @CURVALUE function to get a similar result. Enter the formula @CURVALUE("file","save") in a cell of your worksheet. Then select /Print Headings Top heading, and set that cell as the top heading range. From now on, the current path and file will print at the top of every page.

Compile Your Spreadsheets

Q. *I recently saw a budget program that appeared to be a predesigned 1-2-3 template. However, the program didn't require 1-2-3 to run, and only the functions necessary for the template were accessible. We'd like to create such stand-alone spreadsheet applications for our office. How do we do it?*

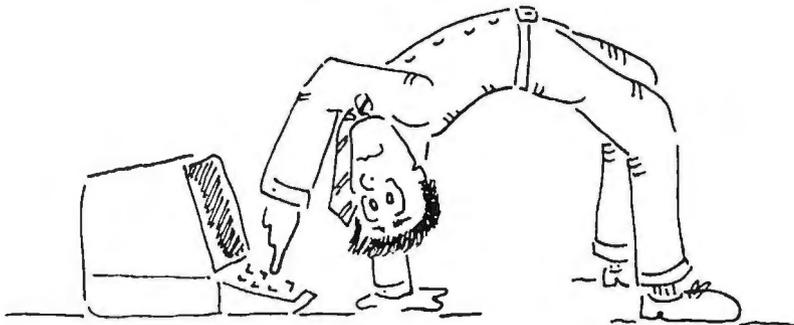
*David Medcalf
Mt. Vernon, Indiana*

Dvorak Keyboard Layout



FIGURE 1: The Dvorak keyboard layout is designed to let you type as fast as possible. Photocopy this chart and use it for reference while learning to touch-type with the Dvorak layout.

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THE HELP SCREEN

A. The budget program you saw was created with a *spreadsheet compiler*, a program that turns any WK1-format template into a stand-alone, executable program. You can distribute compiled templates freely, with no licensing fees or run-time charges. Richard Scoville, *PC World's* spreadsheet columnist, recommends *Baler*:

WHERE TO BUY

Baler 5.1

Baler Software Corp.
1400 Hicks Rd.
Rolling Meadows, IL 60008
800/327-6108, 708/506-1808 (fax)
LIST PRICE: \$495
Reader service no. 669

Repartition Your Hard Drive?

Q. I recently upgraded to DOS 5.0. If I repartition my 80MB hard disk into one big C: drive, will it speed up disk input/output?

Naeem Saleh

Brampton, Ontario, Canada

A. No. Data stored on the inner tracks of the drive may actually take a bit longer to read and write than it would if your 80MB disk were partitioned into three logical drives. This reduction in speed is due to DOS reading the File Allocation Table (FAT) on the outer tracks of the drive before reading each succeeding cluster. For files with clusters on inner tracks, the head must travel farther (from the FAT to an inner cluster; back to the FAT; back to an inner cluster; and so on) to read the file. However, if your disk is only half full or is managed by a controller that has an on-board cache, or if you use a disk cache or run DOS's FASTOPEN program (which reduces the time required to reread files by holding FAT information in memory), you probably won't notice a difference.

Although it won't improve disk throughput, repartitioning might save time. If you switch between C:, D:, and E: many times a day, having one big C: may make you more efficient.

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PC WORLD

Speed Up PostScript Print Jobs

Q. For graphics work, I use a 33-MHz 386, a Hewlett-Packard LaserJet IIP laser printer with a PostScript cartridge, and Windows with Corel Draw and Adobe Type Manager. Even with 8MB of memory in my PC, many of my Corel drawings take as much as an hour to print. How can I speed up the printing process?

Tom Henriksen
San Francisco, California

A. How fast you can print PostScript graphics depends primarily on your printer; 8MB of system RAM is of little help. And although the IIP is a relatively slow printer, there are several ways you may be able to speed things up.

First, be sure to hook the IIP to the PC with a parallel cable; a serial cable slows things down substantially.

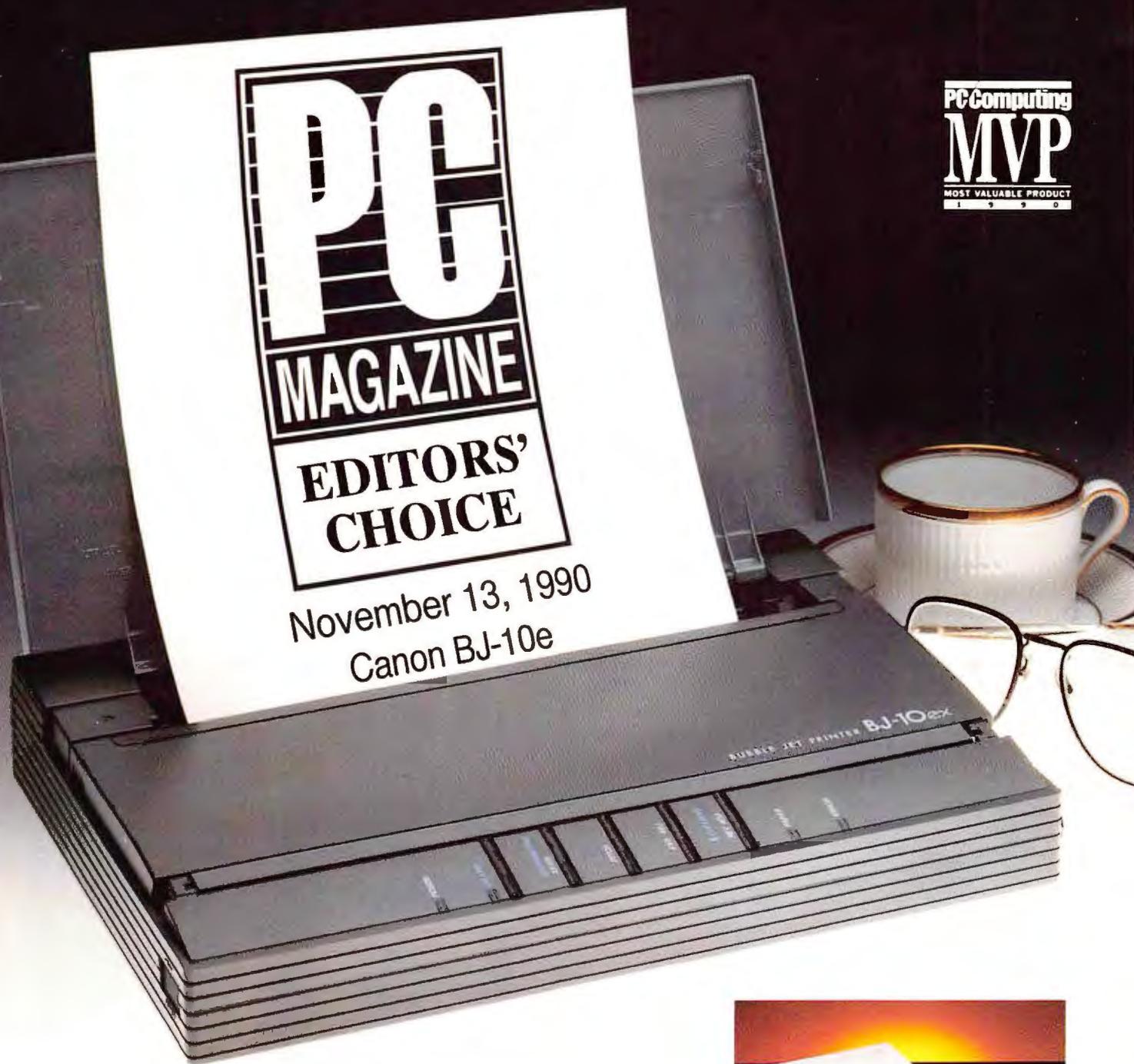
Try unchecking the Use Print Manager toggle in the Control Panel's dialog box. Disabling the Print Manager will lock up Corel Draw during printing but will get the job done faster.

Experiment with printing in PCL (the IIP's native mode) rather than PostScript. There are just a few PostScript effects that PCL can't duplicate (ATM works in either mode), so the only other difference you'll notice is faster printouts. You can even rotate scanned images in PCL by using Corel Trace to convert them to vector graphics.

If none of this works, try upgrading your printer's memory. HP's default of 2.5MB of RAM for the IIP with a PostScript cartridge isn't really adequate—4MB is a more practical amount.

Turning PostScript On and Off

Q. We share a PostScript laser printer on our LAN. PageMaker and other up-to-date programs work fine with it, but some older software, including a custom dBASE program, hangs it up. We also have problems with DOS commands like DIR > LPT1. The printer has Diablo 630 emulation, which works with the older software, but switching between PostScript and Dia-



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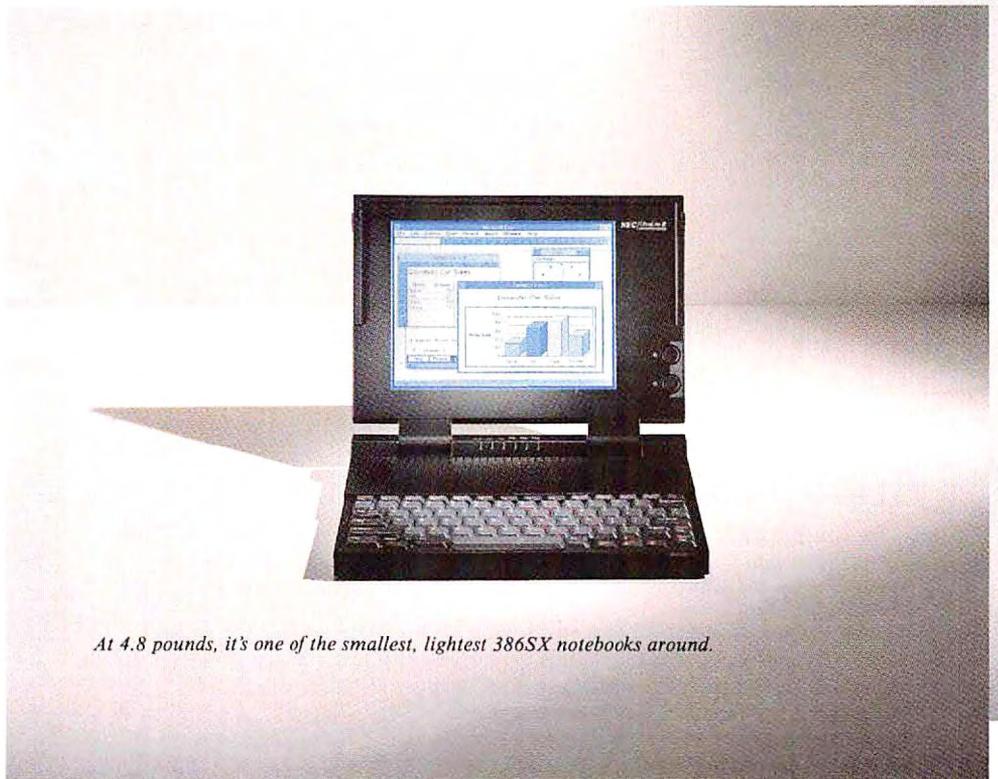
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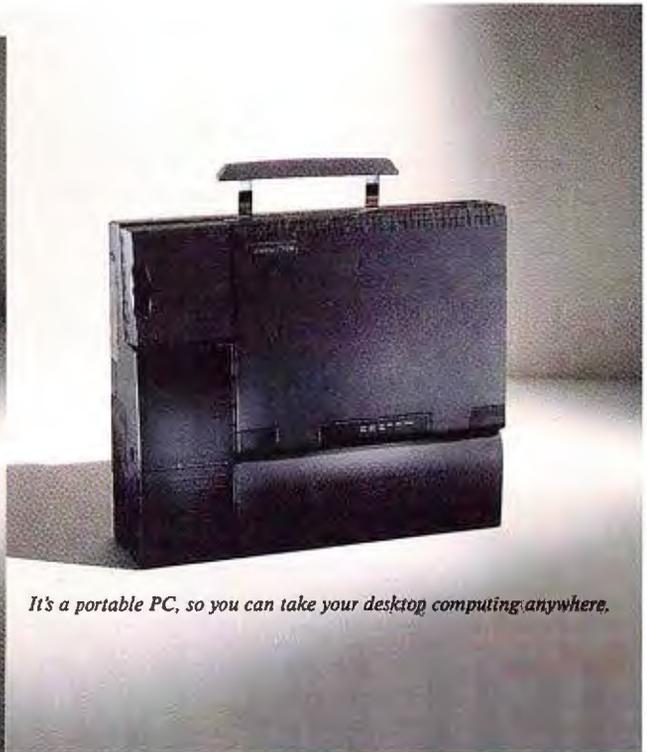
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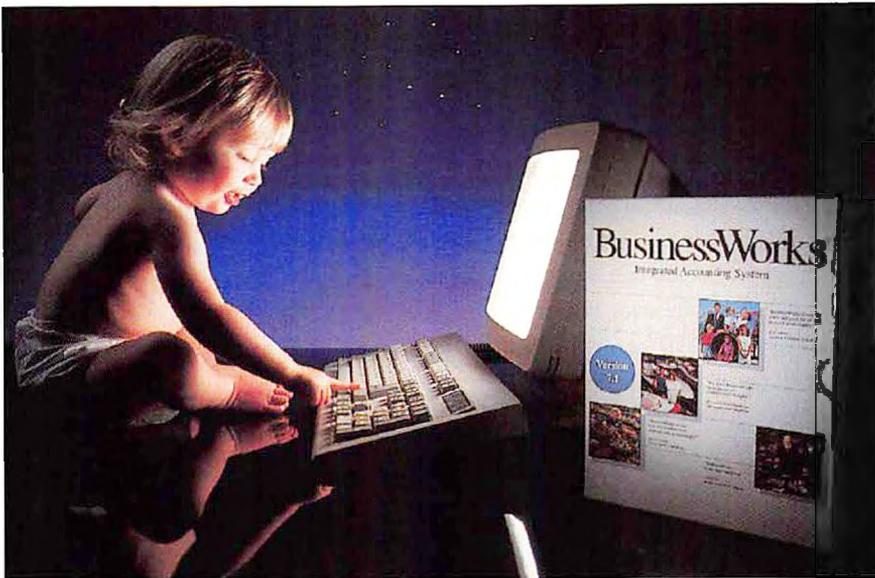
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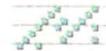
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PC WORLD

blo modes means turning off the printer, flipping a switch, and turning it back on—impossible on a LAN. We'd rather not add a second printer. Is there a way to get this one to work?

Elizabeth Edwards
Portsmouth, Ohio

A. HP LaserJets and compatibles cost much less than they did a few years ago—street prices now start at around \$600. But if that expense isn't feasible, your best bet is LaserTools' *Printer Control Panel*. This memory-resident utility senses when you're printing PostScript and when you're not. With text jobs, it either switches your printer into a compatible mode or adds the required PostScript commands.

If you opt to purchase a new PostScript printer with LaserJet emulation or a LaserJet compatible with a PostScript cartridge, *PCP* will sense whether a print job is formatted for LaserJet or PostScript and automatically switch the printer's mode. *PCP* can't switch modes for a LaserJet-compatible printer that's using HP's PostScript cartridge because that cartridge doesn't have a software command to switch modes, but *PCP* can switch modes if the printer uses PostScript cartridges from Adobe and Pacific Data—in fact, it's bundled with those products.

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Printer Control Panel

LaserTools Corp.
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LIST PRICE: \$149
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Printing With Windows and NetWare

Q. *Every day when I start Windows, I have to connect to my NetWare print queue manually. Is there some way to make this automatic? Also, is there a way to turn off the banner page that precedes each print job?*

Phil Marquardt
Overland Park, Kansas



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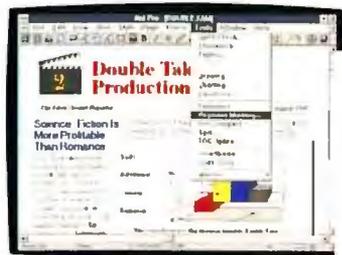
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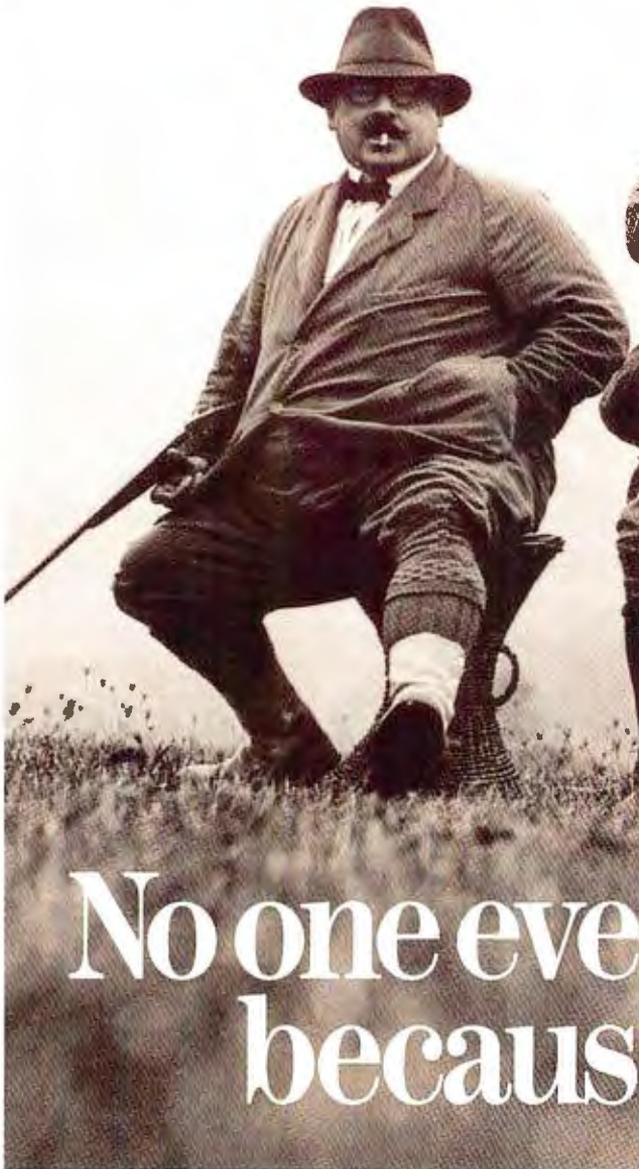
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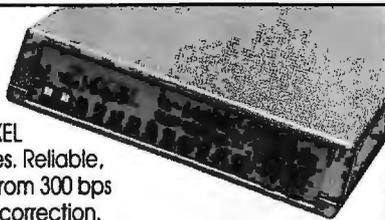
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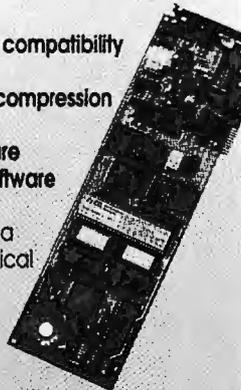


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A. You can use a single NetWare CAPTURE command to do both. After logging on but before starting *Windows*, enter **CAPTURE Q=LASERJET NB TI=99**, replacing 'LASERJET' with the name of your print queue. The 'NB' means "no banners"; 'TI=99' sets a timeout of 99 seconds to allow for *Windows*' tendency to pause in the middle of print jobs.

You can add CAPTURE to your AUTOEXEC.BAT file to set up your print queue automatically when you turn on your computer. Just be sure to insert CAPTURE after the NetWare log-in command but before starting *Windows*. To make this process even more transparent, add it (or have your network administrator add it) to your NetWare log-in script.

You might also want to get your hands on Novell's *NetWare Tools* program. This utility gives *Windows* users a lot more control over network printers, including the ability to turn banners on and off. Check with your Novell dealer or download the file WINUP2.ZIP from Novell's NDD forum on CompuServe.

Excel Update

November's column erroneously stated that Mac and PC versions of *Excel* can't directly read each other's data files. While true for earlier versions, *Excel 3.0* and later versions for the Mac and for the PC do read each other's XLS files; no conversion to SYLK format is necessary. *PC World* regrets any inconvenience this error may have caused.

Send your questions to Robert Lauriston, CompuServe 73707,1731; MCI Mail 381-7106; Internet duck@well.sf.ca.us; or 415/442-1891 (fax); or mail them to The Help Screen, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☺

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

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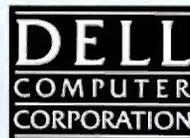
to 1024 x 768 non-interlaced video at a fast 70 Hz refresh rate for a flicker-free display. Unlike the kind you get on some competitive machines that are limited to 60 Hz non-interlaced.

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HOURS: 7AM-9PM CT MON-FRI 8AM-4PM CT SAT 10AM-3PM CT SUN
IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.



THE DELL 486P/20 20 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 50 MB HARD DRIVE, VGA COLOR MONITOR, AND 2 MB RAM.

THE MORE YOU GET, T

If your requirements call for a more powerful or specialized system than the one you've had, you can get an even *better* deal with our higher-end i486 systems. From \$248 all the way up to a whopping \$1,348, you can get it all. And if you still have any doubts, call us. We'll be happy to explain.

MORE VALUE

The Dell 486P/20 is a 20 MHz i486SX general purpose workstation you can upgrade to 33 MHz and beyond.

For a configuration that costs so little, you sure get a lot.

Like programmable Flash EPROMs for easy BIOS upgradeability.

And an 80 MB hard disk drive with 15 ms access time.

And an 8 KB cache built into the processor for increased throughput.

And 4 MB of RAM on 32-bit SIMMs with gold-plated connectors for greater reliability.

And 2 floppy drives.

Surprised? Keep reading.

You'll also get a 1024 x 768 14" color monitor with long persistence phosphors.

And the power to display 32,000 colors simultaneously, if you expand video memory to 1 MB.

And factory-installed MS-DOS® 5.0 and Microsoft Windows 3.0.

And a Microsoft Mouse.

And, considering it's from Dell, a whole lot of peace of mind.

That, by itself, is worth a fortune.



THE DELL 486P/20 20 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 80 MB HARD DRIVE, SUPER VGA (1024 x 768) COLOR MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$248[▽]

MORE PRODUCTIVITY

The Dell 486D/25 is a sophisticated productivity workstation that was designed with your future in mind. To upgrade from a 25 MHz i486SX processor to a faster processor when available, all you'll need to do is replace a processor chip. Not a card. And starting with 4 MB, you can keep adding RAM up to a maximum of 64 MB.

This new system is priced on par with 33 MHz i386DX machines, yet performs up to 40% faster. And its sheer processing power is amply backed by a 100 MB hard drive with a 32 KB cache for increased throughput. A dual floppy drive completes the excellent storage arrangement.

A 1024 x 768 14" color monitor with a 70 Hz refresh rate gives you a flicker-free display. With 32,000 colors, if you make a small expansion of video RAM. Should anything go wrong, the built-in SmartVu™ diagnostic display can find the problem, even if the monitor goes down.

The 486D/25 comes with six expansion slots and five drive bays for added flexibility. You'll also get factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/25 25 MHz i486SX SYSTEM.*
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN™ 14C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$748[▽]

[▽]Savings calculated from Dell retail pricing as of Dec. 9, 1991. No other discounts apply. Promotional prices expire 2/29/92. All prices and specifications are subject to change without notice. Dell and Dell System are registered trademarks. UltraScan and SmartVu are trademarks of Dell Computer Corporation. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. OS/2 is a registered trademark licensed to Microsoft Corporation. MS-DOS and Microsoft are registered trademarks and Windows is a registered trademark of Microsoft Corporation. Best Personal Computer in Office Based End User Satisfaction In Small to Medium Sized Businesses. J.D. Power and Associates is a registered service mark of J.D. Power and Associates. Dell Computer Corporation.

THE MORE YOU SAVE.

As we've just mentioned, here's an amazing fact: feature for feature, you can get an outstanding graphics workstation. Except a high-end price tag. There's a superfast 33 MHz i486DX processor, with 8 KB internal cache. For even greater performance, all you'll need to do is replace a processor chip. So you can upgrade inexpensively as soon as new chips hit the market. Should your workload, heaven forbid, triple by then, you'll still find the 200 MB hard disk more than adequate. And as your requirements become increasingly more sophisticated, you can keep adding to the 486D/33's 8 MB RAM. With a maximum of 64 MB, there's plenty of room to grow. Talking about room, we have a large 15" flat square monitor with 30% more viewable area than a standard 14" monitor, which makes those large spreadsheets and high resolution documents much easier to read. The Dell 486D/33 comes with factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.

MORE SPEED

From desktop publishing to spreadsheet applications, there's one feature that's always welcome, and that's speed. With quick recalcs and lightning fast screen refreshes, you'll get your work done faster with the Dell 486P/33.

The 33MHz i486DX processor generates up to 80% more performance than 33MHz i386DX systems. If that leaves you craving for more, you can upgrade to a faster i486 processor when available.

This 486P/33 configuration features a 100 MB hard drive with a phenomenal 15 ms average access time. An 8 KB cache in the processor boosts performance. And dual floppy drives allow you to read any diskette, regardless of MS-DOS format.

A 1024 x 768 non-interlaced big 15" color monitor with overscan gives you 30% more viewable area than the standard 14" you get with any competitively priced system. For even more versatility on desktop publishing or graphic-intensive applications, just expand video RAM to 1 MB and you'll get a 32,000 color, near-photograph quality display.

The system comes with 4 MB RAM on 32-bit SIMMs with gold-plated connectors, MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486P/33 33 MHz i486DX SYSTEM.*
SYSTEM INCLUDES 100 MB HARD DRIVE, ULTRASCAN 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 4 MB RAM.

SAVE \$948[▽]

MORE GRAPHICS

The Dell 486D/33 has every high-end feature you'd expect in an outstanding graphics workstation. Except a high-end price tag.

There's a superfast 33 MHz i486DX processor, with 8 KB internal cache. For even greater performance, all you'll need to do is replace a processor chip. So you can upgrade inexpensively as soon as new chips hit the market.

Should your workload, heaven forbid, triple by then, you'll still find the 200 MB hard disk more than adequate.

And as your requirements become increasingly more sophisticated, you can keep adding to the 486D/33's 8 MB RAM. With a maximum of 64 MB, there's plenty of room to grow.

Talking about room, we have a large 15" flat square monitor with 30% more viewable area than a standard 14" monitor, which makes those large spreadsheets and high resolution documents much easier to read.

The Dell 486D/33 comes with factory-loaded MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



THE DELL 486D/33 33 MHz i486DX SYSTEM.*
SYSTEM INCLUDES 200 MB HARD DRIVE, ULTRASCAN (1024 x 768) 15C MONITOR,
5.25" 1.2 MB AND 3.5" 1.44 MB FLOPPY DRIVES AND 8 MB RAM.

SAVE \$1,348[▽]

Gold-plated SIMMs increase system reliability by eliminating connection-related errors.

There are plenty of companies anxious to sell i486 systems at a low price. All they really need is a supply of parts (the cheaper, the better) and a garage to assemble them in. Once the "production line" gets going, they place



The 486P/20 is one of the few computers to feature 16 MB SIMMs.

a few ads in the paper. After that, of course, it's anyone's guess as to which will last longer: the computer or the "company" it came from.

At Dell, on the other hand, we offer lower prices by cutting down on traditional retailer mark-ups, not quality. In fact, we're almost fanatical about the quality of every machine that leaves our state-of-the-art factory. That attitude is reflected in the way we design, test, manufacture and ship our i486 systems.



Our Black Box test makes sure your Dell computer never arrives this way.

To see how our i486

systems stand up to air

delivery, we use a Black Box. Or, in technical parlance, a portable accelerometer/thermometer. This little device is fitted into a test computer which we then send out through regular delivery channels, much as if you had ordered it yourself. When we bring it back, the "Black Box" tells us exactly what the computer went through, in terms of shock, vibration and temperature. This innovative test is part of a series that's been so

successful in helping us improve our packaging, we've won an international award for package design.

To make our computers more reliable, we cook them. After our computers are fully assembled and configured, randomly selected units are "burned-in" and tested at 104°F

In perhaps the most grueling temperature test we've ever come up with, pilot Dell systems must survive a storage chamber where temperatures vary rapidly between -40°C and +60°C.

JUST BECAUSE YOU PAY LESS DOESN'T MEAN YOU GET LESS.

Our computers have a heart of gold.

At Dell, we take quality consciousness so seriously, we fit our i486 systems with SIMMs that have gold-plated connectors. If you're wondering what such expensive components are doing in relatively inexpensive computers, the answer is simple: they cost us a bit more, but by eliminating connection-related errors, they're worth their weight in gold.

It's exactly this kind of commitment to quality control that's enabled us to meet CSA, UL, TUV-GS, FCC and VDE standards, earning worldwide regulatory approvals.

There are thousands of ways to use a Dell i486 system. Dell i486 systems are tested for compatibility with major peripherals, software applications, network topologies and network operating systems, including Banyan and Novell, in several hundred permutations per system. They're

even tested for AS-400 connectivity. So you can use our machines in virtually any environment.

50% fewer opportunities for things to go wrong. After the traditional computer manufacturer builds a system,

it goes to the dealer, who then does his own configuring. That's 2 stages of manufacturing, which means twice as many opportunities for things to go wrong.

A Dell i486 system, on the other hand, is manufactured only once. We custom-configure memory boards, network cards and advanced video, testing the system as a unit.

We even load select software packages you buy from us, at no cost to you. That includes MS-DOS 5.0, Microsoft Windows 3.0, and many popular applications programs.

With 20 diskettes and 2 hours to load and configure just one system, imagine the time you'll save and the potential hassles you'll avoid. Which gives you yet another reason to buy a Dell i486 system:

When you open the box, you're ready to go.



800-626-4806

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IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

And if you think that's tough, consider our shock test. Sample i486 computers are strapped to a guillotine-like apparatus which repeatedly drops them to the

ground. This tells us what we can do to improve their shock tolerance level.

Our power supply units undergo an equally rigorous quality control process. In a test that simulates several years of actual usage, randomly selected test units are switched on and off 1,200 times; only then can they be approved.

While our testing may seem a little extreme, it's based on a rather simple fact: if our machines don't fail with us, they haven't much chance of failing with you, either.



A small expansion of video memory gives you over 32,000 colors for a near photographic quality display.

WE THINK A COMPUTER SHOULD COME WITH MORE SUPPORT THAN THIS.

As a potential buyer, you'll receive lots of attention from most computer companies. Until they receive your check, that is. For all practical purposes, once the sale is closed, so is the company.

At Dell, on the other hand, half our story begins after you receive your computer. Despite our low prices, we've built a reputation for the highest level of support in the industry.

To begin with, a Dell expert works with you to figure out which computer, with which options, works best for you. We help you arrange financing from a wide variety of credit, lease and lease-to-buy plans. Then we test, pack and ship your

personalized personal computer to you via two-day air standard.

In the unlikely event that you have a problem with your computer, it won't last long. Our technical support staff solves 90% of reported problems over the phone. Usually in six minutes or less.

You can also get technical help 24 hours a day via our innovative TechFax™ line. Just dial up and detailed system information

will be automatically faxed back to you from the Dell Technical Library.

We even have a special section on CompuServe's PC vendor forum. So you can view other users'

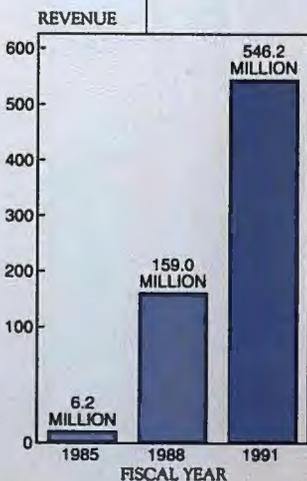
problems, and, more importantly, our solutions. But what makes our bulletin board special is that we constantly monitor what goes on there. Which means we can keep track of any small problems, and stop them before they become big ones.

But what if you have a problem that just can't be solved over the telephone?

On-site service is an ambiguous term.

To some enterprising vendors, it conveniently means that the replacement parts, and not the service technician, will arrive on-site. Which isn't as crazy as you may imagine; there are any number of do-it-yourself computer whiz kids in this business.

If you don't count yourself among their



Dell has built a \$546 million dollar business by building a relationship with every customer.



ranks, you'll prefer Dell's way of supporting our machines.

If needed, a trained technician can be at your home or office with a solution in hand, usually by the next business day.[△]

What's more, every time you call Dell Tech Support an entry is made in our customer database. So over time, we'll know your computer as well as you do. Maybe even better.

And you get all this support

without getting

a bill. Because the price of your system includes on-site service coverage for a year, and phone support forever.

Buy a computer and get the company.

By standing firmly

behind every machine we've ever sold, we've built up a \$546 million company in just seven years, one customer at a time.

On the way, we've acquired quite a following. For example, the editors at *PC Week* have described the Dell service and support package as "overkill." J.D. Power and Associates[®] ranked Dell "Best PC in Customer Satisfaction in Small to Medium Sized Businesses."

We've won *PC Week's* Customer Satisfaction Poll an unprecedented eight times.

And in the last 12 months alone, we've collected 53 product awards, including *PC Magazine's* Editor's Choice, *InfoWorld's* Buyer's Insurance and *PC World's* Best Buy and World Class Awards.

And it's not just the smaller users that are satisfied, either: Dell computers are now used

by over two-thirds of the FORTUNE 500[®] Overseas, it's been pretty much the

same story. We've more than doubled our overseas sales in the last 3 years in a row, and won in customer satisfaction surveys in the UK, Germany and France.

Still can't decide? Take 30 days to make up your mind. Within that time, if you aren't completely satisfied, just

return your Dell system and we'll refund your money, no questions asked.

We're proud to add, though, that this unconditional

guarantee has been used so sparingly, only 1.2% of the over half a million computers we've sold so far have ever come back.

What does keep coming back, in ever increasing numbers, are our customers. Over 70% of the people who buy a Dell computer buy another. That's perhaps the strongest statement of satisfaction any manufacturer could ever hope to receive.

So before you buy an i486 system, ask



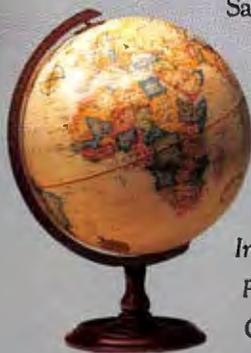
Every Dell Computer comes with a trained computer staff who knows your computer as well as you do. Maybe better.



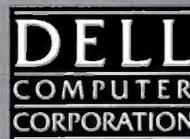
Our 53 product awards in 1991 alone make Dell one of the most awarded PC companies in the world.

around; there are plenty of Dell users out there. And if there's anything you need, call us. But you'd better hurry.

Great computers may last a long time but great deals don't.



Last year, Dell won customer satisfaction polls in the U.S., U.K., Germany and France.



800-626-4806

TO ORDER, CALL PLEASE REFERENCE #11D&4
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SEND US THE FAX AND WE'LL SEND YOU THE FIGURES.

Fill this out, fax it to us and we'll send back a price quote, spec sheet and any other information you may need on our line of i486 systems.

PROCESSOR

- i486SX, 20 MHz
- i486SX, 25 MHz
- i486, 33 MHz
- i486, 50 MHz

ARCHITECTURE

- EISA
- ISA

CHASSIS

- Small Footprint
- Mid-Size
- Floor-Standing

DISKETTE DRIVES

- 3.5"
- 5.25"

MEMORY

- 4 MB
- 8 MB
- 16 MB

HARD DRIVES

- 50 MB
- 80 MB
- 100 MB
- 200 MB
- 320 MB
- 650 MB
- Other

MONITORS

- VGA Color, 14", 640 x 480, .39mm dot pitch
- VGA Color Plus, 14", 640 x 480, .31mm dot pitch

Super VGA Color, 14",

- 1024 x 768, 28mm dot pitch
- UltraScan 14C, 14", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz
- UltraScan 15C, 15", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz
- GPD-16C, 16", 1280 x 1024, .31mm dot pitch
- GPD-19C, 19", 1280 x 1024, .31mm dot pitch

OPERATING SYSTEMS

- MS-DOS 3.3
- MS-DOS 4.01
- MS-DOS 5.0
- MS-OS/2 1.21
- Dell UNIX® System V

OTHER (i.e.: tape drive, network card, mouse or modem)

Name _____

Title _____

Company _____
(If Applicable)

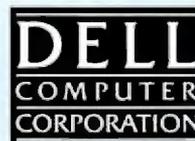
Address _____

City _____ State _____ Zip _____

Fax Number _____

Please have a Dell representative call me at

() _____



800-727-8320



CONSUMER WATCH

Advice and information for
the computer consumer

Christine Whyte

Minuteman Customers Left Hanging

Last month we reported numerous complaints about products bought from but not delivered by two mail-order houses: Stargate Computer and 1 Stop Micro. Since then, complaints have poured in about two other newcomers to the PC marketplace: American Computer Technology of Garden Grove, California, and Minuteman Computers of Costa Mesa, California. In credit reports obtained by *Consumer Watch*, American Computer Technology is listed as a reference by 1 Stop Micro. We have been unable to determine any direct link between the two companies, however.

To date, no one from 1 Stop Micro, American Computer Technology, or Minuteman Computers has satisfactorily responded to the inquiries made by their customers and *Consumer Watch*.

The following stories should serve as a reminder to exercise caution when you're buying direct from an unfamiliar company. Before you buy, make sure you check for complaints filed with the local postal inspector, Better Business Bureau, and attorney general. Protect

yourself by paying with a credit card, and notify your credit card company immediately if you are charged for products you don't receive.

Minuteman Computers: Juan A. Pérez-Casado of Hillside, New Jersey, bought a 33-MHz 386 system from Minuteman Computers that included DOS and *Windows 3.0*. Two weeks later the system arrived, but without an invoice. The company charged the system price to Pérez-Casado's MasterCard account. When the hard disk failed a month later, the company sent him a new controller card, which didn't fix the problem. Minuteman told him to return the broken hard disk and they would send him a replacement unit.

"I waited 16 days for the new one to arrive, calling every day," writes Pérez-Casado. "I finally spoke to [someone] who agreed to refund my MasterCard account, but after 14 days no credit was made. I called the company again, and the person who answered the phone told me their credit card processor was down and they could not credit my account."

Pérez-Casado contacted the bank that had issued his MasterCard. Before they could debit Minuteman and credit his account, they required the invoice that Pérez-Casado never received. As of this writing, Pérez-Casado has yet to hear from Minuteman. "They're either 'out to lunch' or 'have gone home for the day,'" he says.

Jay Hendrickson of Mapleton, Oregon, ordered four HP LaserJet III printers from Minuteman Computers and paid with a cashier's check for \$6,706.44. The company acknowledged receipt of the check, and said they would ship two printers the same day and the

remaining two the next day. Four days after the first two printers were due to arrive, the company told Hendrickson they were on the way. Three days later the company said the printers were shipped the previous day. When the printers hadn't shown up three days later, Hendrickson asked for a refund and was told the owner, John Tremblay, was unavailable to sign a check.

"When we asked for a specific person, the responses were, 'out to lunch,' 'caught in traffic,' 'gone for the day,' 'out on an emergency,' 'at the warehouse and will return shortly,' 'late returning from lunch,' and 'they will return your call,'" says Hendrickson. Despite more than 52 calls to the company, Hendrickson has not received his printers or a refund.

John T. Haritos of Tucson, Arizona, sent a certified check for \$986.75 to Minuteman Computers for an HP LaserJet IIIP. "I was assured it was in stock and would be shipped upon receipt of a check," writes Haritos. "I telephoned Minuteman one week later and was told the check was just received. I know the mail is often slow, but it could not take that long to go from Tucson to Los Angeles. I called two days later and was informed that UPS had damaged the printer and returned it to the shipper to be repaired. Continued phone calls have produced no results." Haritos has still not received his printer or a refund.

Yakov Korenfeld of Lawrenceville, New Jersey, received a nonfunctional system from Minuteman Computers that was billed to his Visa credit card account. He paid his Visa bill, but after Minuteman failed to provide help, Korenfeld decided to return the system and request a full refund under the com-



BUG WATCH

Up-to-date information about hardware and software bugs

Corefast 2.x

If you use *Corefast*, a backup program from Core Int'l, in conjunction with On-track Computer Systems' *Disk Manager*, a hard disk partitioner, expect trouble restoring backup files. The backup software appears to work correctly—writing the files to disk or tape—but in fact no backup is performed. According to a Core Int'l spokesperson, the problem stems from *Corefast*'s difficulty in recognizing the way *Disk Manager* writes information to disk. Core is investigating the problem, but no fix is available as of this writing.

Core Int'l
407/997-6055

Microsoft Publisher 1.0

Users of *Microsoft Publisher* report being unable to print gray-scale TIFF images, although the images can be displayed on screen. Microsoft is aware of the problem and, according to a company spokesperson, has developed several possible work-arounds. No fix is currently available, however. Users can obtain information about the work-arounds by logging on to Microsoft's CompuServe forum or by calling the company's product support line. Microsoft expects the maintenance update to be available within the next 30 days. Call the product support line if you'd like to receive it.

Microsoft Corporation
206/454-2030

WinFax 2.0, WinFax Pro 2.0

Having trouble printing faxes under *WinFax* or *WinFax Pro*? Delrina Technology, the program's developer, says that users who set the 'resolution for view' option at 25 or 50 percent may get unreadable printouts. No such problem arises when the option is set at 100 percent. A fix is available. Users of *WinFax 2.0* should first contact the manufacturer of their fax/modem board, since this version is an OEM product only. If you're unable to get help through that channel or if you use *WinFax Pro*, contact Delrina directly.

Delrina Technology
716/855-3676

Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and report on those of the broadest interest.

pany's advertised 90-day money-back guarantee. "I was told that upon receipt of the returned system, my Visa account would be credited for the full amount of \$2159.28," writes Korenfeld. "To date, one of Minuteman's two checks (for \$6.48) for remuneration of shipping charges was returned to the bank because the account was closed. I have tried without success to contact Minuteman via the 800 number to obtain credit. The sales/customer service representatives have informed me that I must speak with a supervisor, and then when I call, I'm told that supervisors are never around." He has forwarded his complaint to the district attorney of Orange County, California, and the Los Angeles division of the U.S. postal inspector.

American Computer Technology:

Unlike 1 Stop Micro and Minuteman Computers, both of which continue to do business, American Computer Technology appears to have closed up shop, taking with it the funds of several customers who ordered but never received products. Although we have been unable to reach any of the principals of the company, we are continuing to investigate this matter and will report our findings in next month's column.

William J. Cling of Hudson, Ohio, called American Computer Technology to verify a price on an advertised printer. "That particular printer was on back order, [but I was told] if we faxed a purchase order to them, we would be put on their waiting list. We faxed the purchase order and requested that they get back to us with the total amount to be charged to our credit card. Since then, we have heard nothing. When we try to call, the phone just rings and rings. We managed to get through once, and someone was going to check on our order, but we were cut off in the middle of our conversation." Cling notified his credit card company of the problems with American Computer Technology, and he was never charged for the unreceived merchandise.

Allen R. Alloway of Douglassville, Pennsylvania, canceled his order with American Computer Technology after they failed to deliver his disk drive within three weeks of the order date. At the same time, he informed the company in writing not to charge his credit card for the product. After many attempts, he was unable to contact anyone at the company by phone: "I either get an immediate busy signal or the phone rings for about five minutes and then a busy signal. Hence, I have decided to purchase the product from another dealer."

Walter Stark of Halesite, New York, had a similar experience. "I ordered a Canon printer and a two-bin feeder and was told the shipment would be made within two weeks. After three weeks passed I called to get a status report. Over the past two weeks I have spoken with Eric, Mike Thomas, Gene Evans, Richie Collins, and most recently Jason Collins, all of whom put me on hold, never to be heard from again." Stark has since canceled his order.

Mail-Order Plaudit

I've found CompuAdd to provide top-notch service and support. If you have any problem in the first 30 days, they will airmail a brand-new computer to you and include a prepaid, completed Federal Express air bill for returning the old computer. All you do is put it in the box and call Fed Ex. If you are comfortable with just replacing a defective part, CompuAdd will provide the same service for defective components during the next 60 days.

For the next nine months of the warranty, you may have to send the faulty computer in for service, although extensions of the above "super warranty" are available at a reasonable cost.

This is the only company I know of that pays shipping both ways in such a convenient way. They charge extra for on-site service, but that makes little difference to those of us not "within 100 miles of a service center."

Tom McGrane
Fairbanks, Alaska

(continues)

Food for the senses at a price that makes sense: \$749*

Introducing CD Gallery™. The Interactive CD-ROM System from NEC.

Is this the offer you've been hungry for? Cash in big on the sensational world of CD-ROM with seven exciting software titles for the IBM PC and 100% compatibles, with all the necessary hardware including the amazing NEC CDR-36 CD-ROM reader, KOSS® SA/30 amplified stereo speakers and even stereo headphones, all for just \$749*. There's also a CD Gallery version available for the Macintosh at just \$699*. Or, if you want to upgrade to the NEC CDR-73, one of the fastest readers on the market, it's just \$1,050* for the IBM XT/AT. And it's all incredibly easy to set up and use. But don't chew on this offer too long because supplies are limited. Call 1-800-NEC-INFO for the nearest authorized NEC dealer to find out where you can pick up the ultimate feast for your mind.

*Manufacturer's suggested retail price, actual price may vary, call your dealer for actual pricing. Other versions available for PS 2, parallel SCSI & Macintosh. © 1991 NEC Technologies, Inc. CD Gallery is a trademark of NEC Technologies, Inc. The New Grolier Electronic Encyclopedia is a trademark of Grolier Incorporated. The Software Toolworks is a registered trademark of The Software Toolworks, Inc. Time Table of History is a trademark of Xpress, Inc. Battle Chess is a trademark of InterPlay Productions. Macintosh is a registered trademark of Apple Computer, Inc. IBM, XT, AT and PS 2 are registered trademarks of the International Business Machines Corp.



Because  is the way you want to go.

NEC

C&C Computers and Communications

Circle 203 on reader service card

Editor's note: According to CompuAdd spokesman John Pope, the services mentioned above are provided to customers in remote locations in lieu of on-site service.

Two Tales: Paying the Price for Discounted Hardware

I purchased from a discount electronics

store an Acer Scanner Model 6671, which I realized at the time was an older model because of its price. The scanner box stated that the product required *Windows 2.0* or higher. Since I was running *Windows 3.0*, I didn't anticipate any problems. When I installed the scanner board and *Scan Studio* software, the software wouldn't work prop-

erly. An Acer technical support representative told me their software wouldn't work under *Windows 3.0*, and that he couldn't help me because Acer had discontinued that model and the company was no longer supporting it. I didn't expect Acer to provide first-class service on an older model, but I did expect them to stand behind their product.

*David K. Merriman
Irving, Texas*

Acer America Corporation responds: The Acer Scanner Model 6671 was one of Acer's early products, developed in late 1986. Product sales were discontinued in mid-1989 due to low sales volume. The software delivered with the product was designed to operate under DOS and *Windows 2.0*. Mr. Merriman's confusion results from the fact that *Windows 3.0* is not an upgrade to the 2.x versions of *Windows*, but rather an entirely new release as documented by Microsoft. Since Acer discontinued this scanner model a year prior to the *Windows 3.0* release, we do not plan an upgrade for the scanner software. Acer provides repair services, spare parts, and technical assistance for five years after a product is discontinued. This support does not include updates to the software or firmware except in cases where a serious problem causes the product to not meet its original specifications.

*John Hulten,
Director,
Acer/Altos Customer Service*

Editor's note: Mr. Merriman's predicament in this situation illustrates the importance of confirming that any hardware or software you purchase will run with your exact system configuration. Don't rely on the reseller to fill you in on incompatibilities, particularly when you're purchasing from discount stores.

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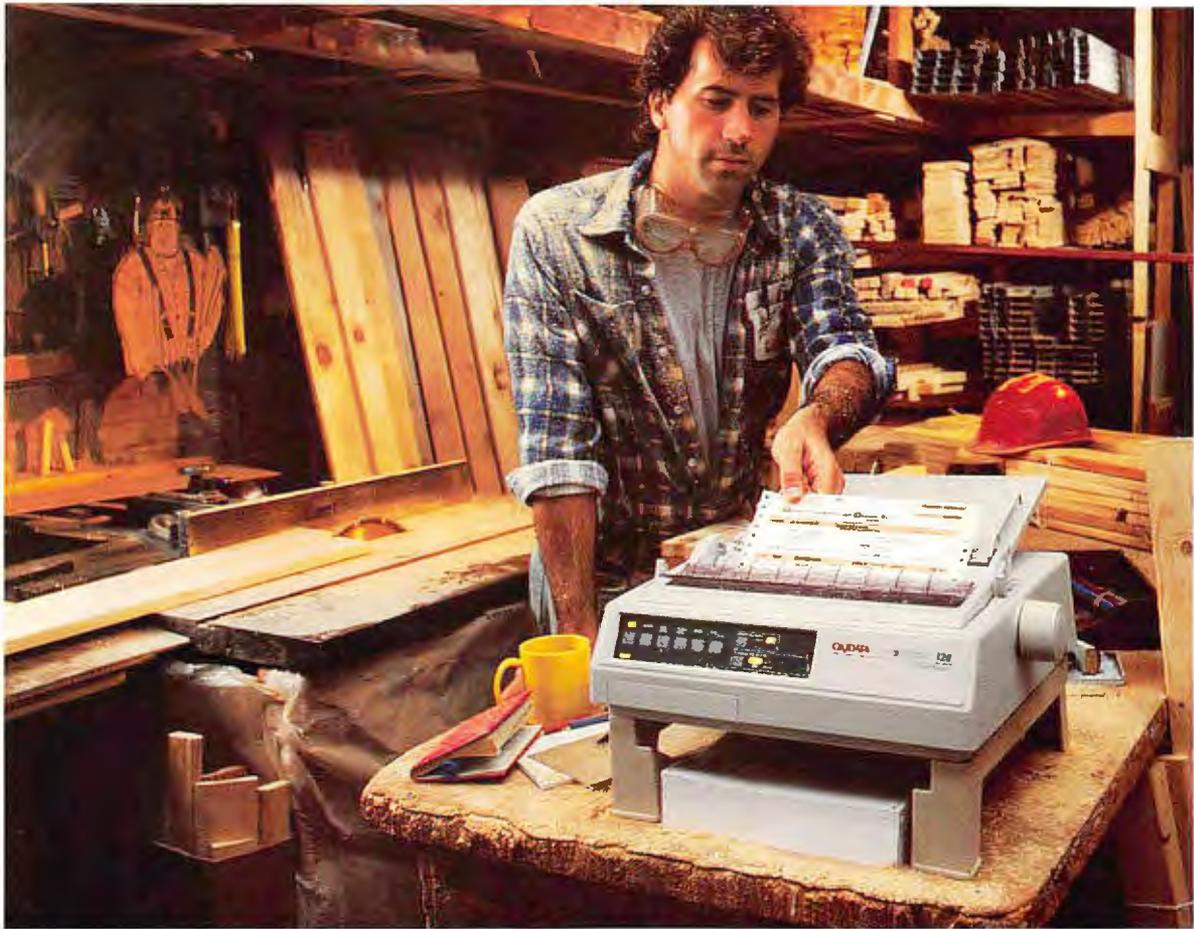



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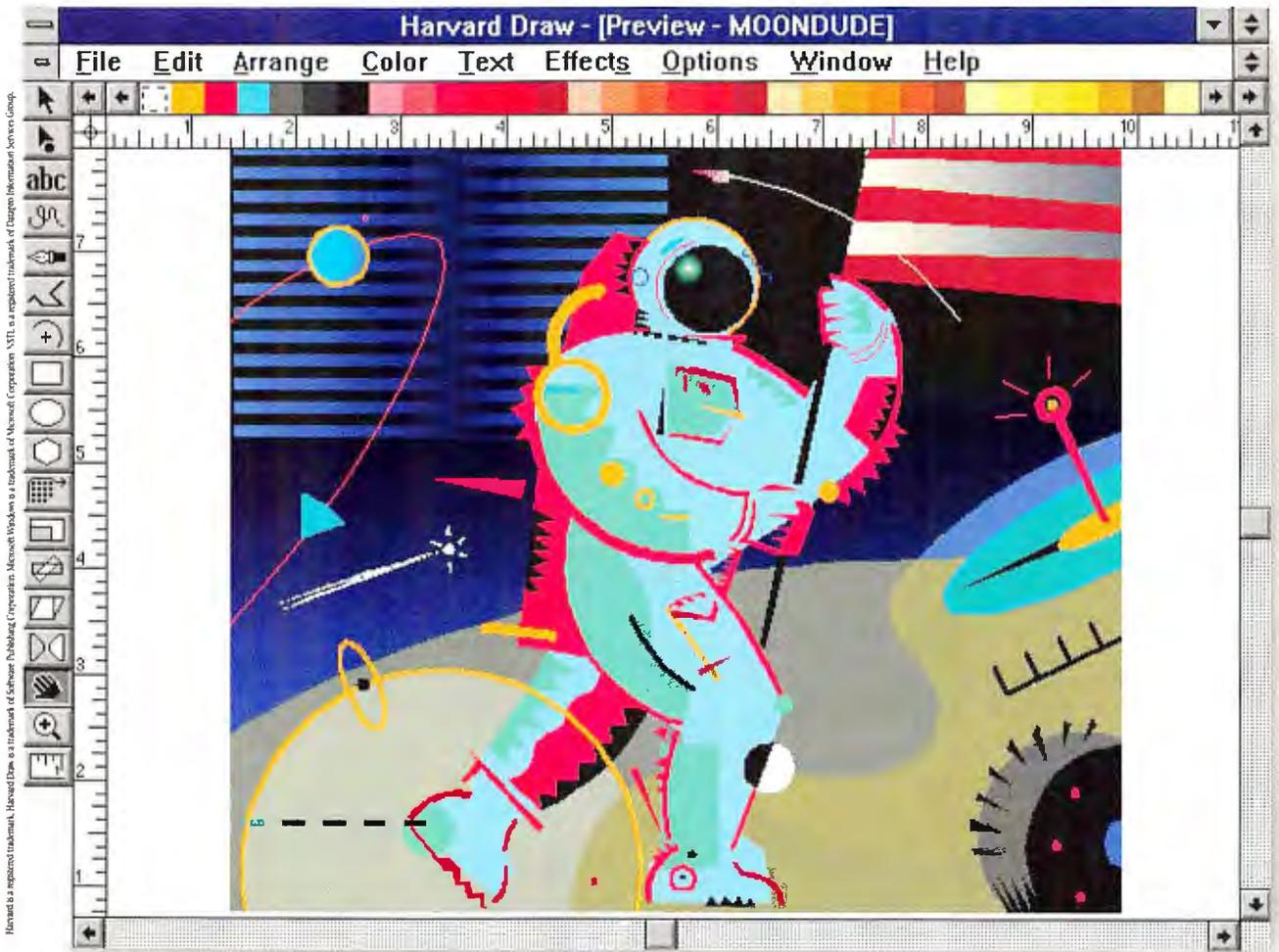
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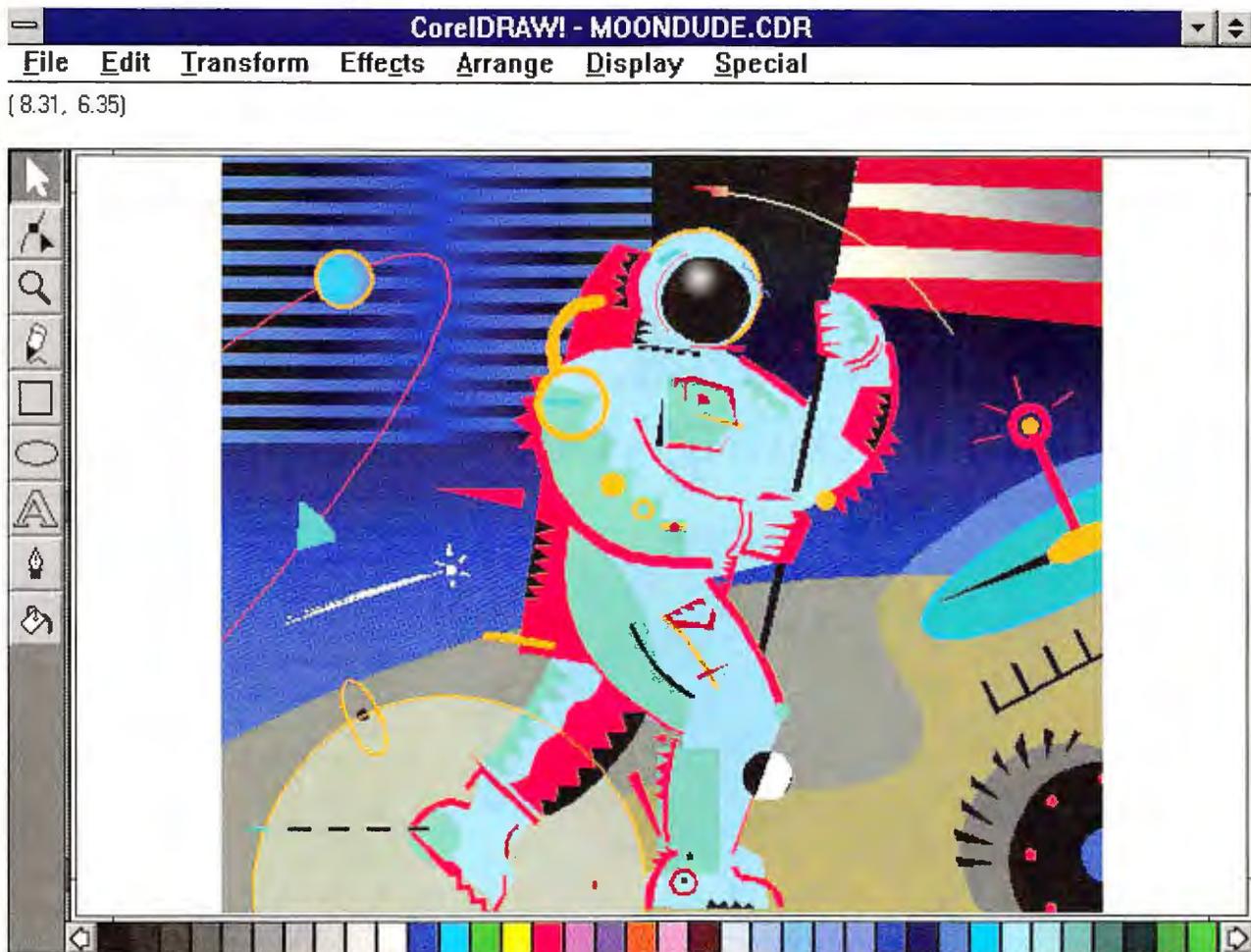
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your own conclusion.

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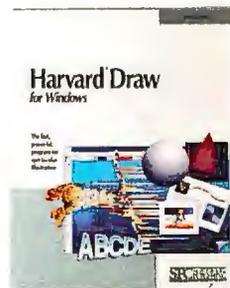
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pany that had evidently purchased the remaining stock when this plotter was discontinued. That was okay then, because I wanted to use the plotter with *AutoCAD 9.0* and *1-2-3 2.01*, both of which had drivers for it. Unfortunately, the current versions of these software packages no longer support this plotter. I've been able to work around the prob-

lem in *1-2-3*, but not in *AutoCAD 10* and *11*. The software necessary to write Autodesk device drivers is not cheap, and Autodesk doesn't write special drivers for their software. Can you help keep my plotter from becoming a large paperweight?

*James Basinger
Salt Flat, Texas*

Amdek responds: Amdek is a brand name of Wyse Technology, which provides services and support for its products for five years after product discontinuation. We work with software companies to keep current Amdek and Wyse Technologies products up-to-date with recent software releases. However, we do not attempt to keep discontinued products current with ongoing revisions made to the many available software programs.

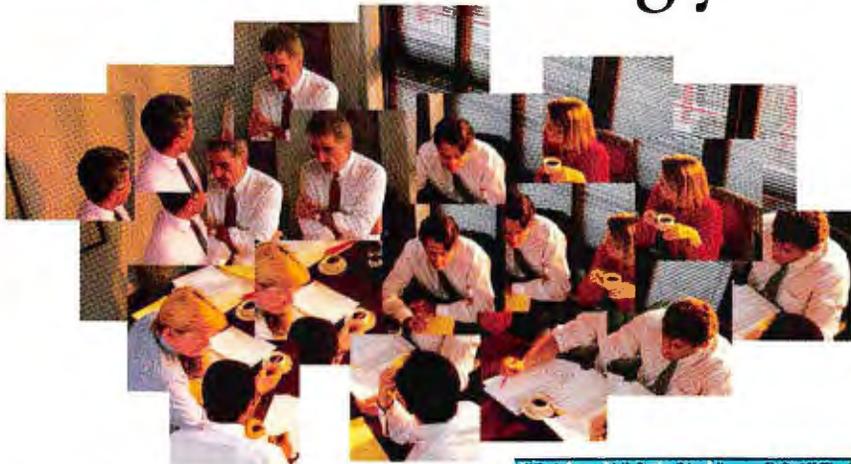
We were unable to locate an Amdek plotter support group that might be able to help Mr. Basinger, but we did track down a listing of Autodesk User Groups that may be of assistance to him in developing an *AutoCAD* driver.

*Bob Goodman
General Manager, Amdek*

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Christine Whyte is a freelance editor in San Francisco.

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*TJ Byers
Contributing Editor*

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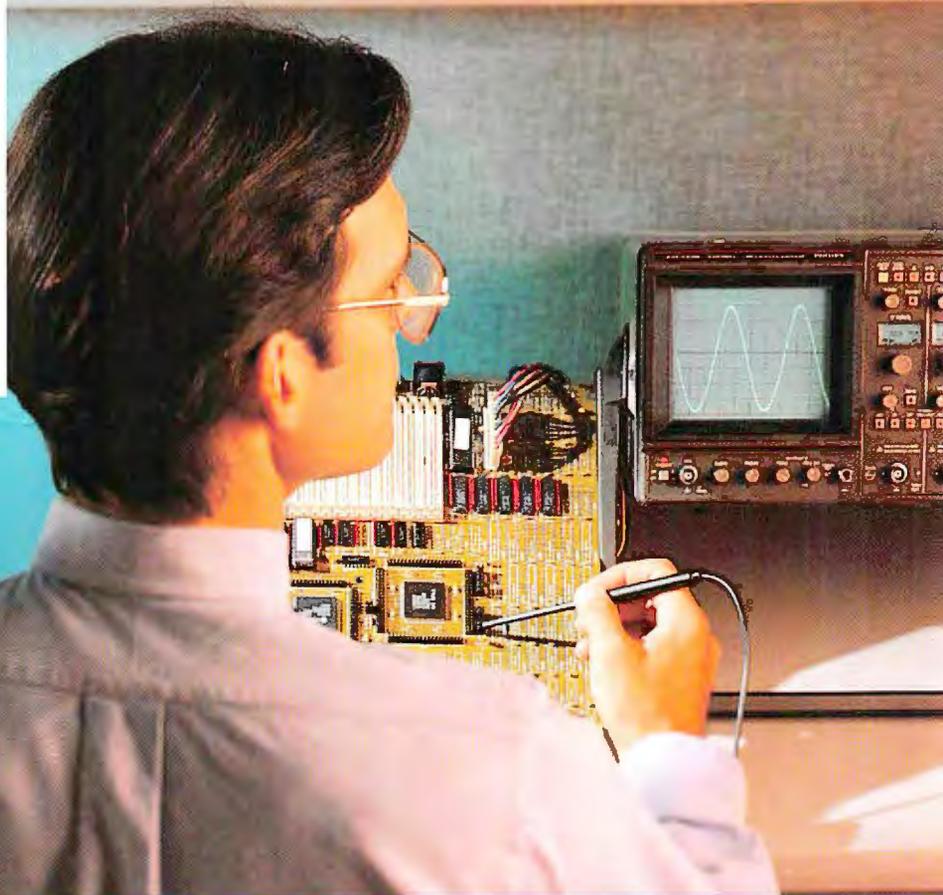


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Merger Removes Legal Worries About Language

Borland's Paradox: To Make dBASE Better

Anxious Users Await the Product of Borland's Plans

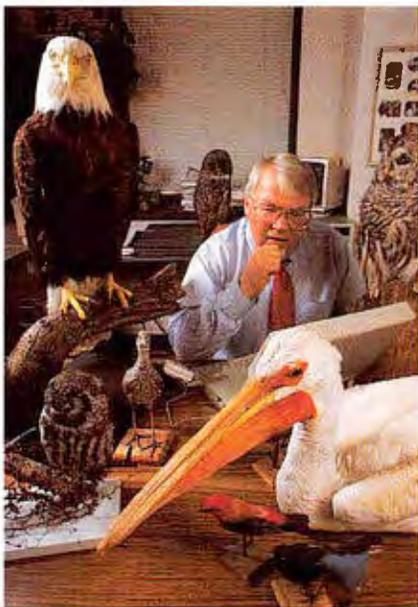
Picture the *dBASE* user's worst nightmare: Despite promises to support and develop Ashton-Tate's *dBASE* platform, Borland announces plans to phase out *dBASE* and replace it with "generous" upgrade offers for its *Paradox* alternative.

Unlikely? Yes, according to the majority of key customers and analysts. Borland has a lot to win by hanging on to the huge installed

base of *dBASE* users. By acquiring Ashton-Tate, Borland gained control of more than 70 percent of PC data base sales, according to Computer Intelligence estimates.

So Far, So Good

Up to this point, Borland has made all the right moves. To win Justice Department approval of its \$440 million Ashton-Tate acquisition, Borland dropped Ashton-Tate's lawsuit against Fox Software, which had cast a cloud over use of the *dBASE* language. Borland also promises both a *dBASE for Windows* product (tightly integrated with its object-oriented, cross-application, Data Base Engine architecture) and a new *dBASE* for DOS this year.



Borland will do more with *dBASE* than Ashton-Tate did, says supervisor Jack Bradford.

These offerings will integrate Borland and Ashton-Tate technology, says Vice President Rob Dickerson. "Ashton-Tate was working on versions of their own, of course, so we looked at what they had and moved all their R&D guys over here."

"From what I hear, Borland is going to do more with *dBASE* than Ashton-Tate did," says Jack Bradford, programmer and supervisor at the Minnesota Department of Natural Resources in St. Paul. "Ashton-Tate said it was going to do a lot of things, but it was just blowing smoke."

Richard Brenner, president of Westar Systems in Colorado Springs, is less optimistic than Bradford but has no plans to change data base platforms—

for now. "All I've really seen are a few press releases, and at this point, none of that means a thing," Brenner cautions. "Borland will have to be very careful in how it handles *dBASE* because there's no guarantee that developers now will stay with *dBASE*." It's important, he says, that Borland come out with either a maintenance release or an upgrade of *dBASE* within six months.

Keith Mitchell, vice president of operations at SOLON Consulting Group in Silver Spring, Maryland, wonders whether Borland will bother to develop and maintain both *Paradox* and *dBASE* over the long haul. He is also concerned about Borland's ability to support *dBASE* with "someone at the other end of the phone who really, really understands the product." Moreover, according to company president Phillippe Kahn, Borland has written its

upcoming *dBASE* products from scratch, leaving some users concerned about support for earlier versions.

Liberating the Language

Pat Adams, data base consultant and president of DB Unlimited in Brooklyn, feels that *dBASE* users can rest easy: Borland's acquisition of Ashton-Tate only preserves their investment. "Ashton-Tate, let's face it, was going nowhere," Adams says. "The merger really spurs competition. . . . This makes Fox work even harder."

Indeed, Fox president David Fulton has ambitious plans for *FoxPro* on *Windows* and other platforms, and he is confident his company can take sales away from Borland. The merger of Borland and Ashton-Tate is "very healthy" for users because it resulted in the removal of legal barriers to open competition. "It is now possible for anyone to enter the market," says Fulton. Competition should promote more options for users and ensure that Borland keeps supporting and evolving *dBASE*.

—Jeff Bertolucci



The look of things to come. This beta of *dBASE* for *Windows* shares many features with the upcoming *Paradox* for *Windows*.

Dealing a New Standard—Take Any Card

PCMCIA 2.0 to Create Multifunction, Swappable Cards

PCs keep getting smaller, lighter, and more mobile, but their software and peripherals have been lagging further and further behind.

This problem is particularly acute for palmtop PCs. If you want to transmit data over a modem or network, you must drag along another box and cable. And although you may be able to insert one of those snazzy credit card-size integrated circuit cards that hold application packages, your choices are severely limited because each palmtop requires its own software.

Fortunately, a new standard for integrated circuit cards should turn the situation around. Developed by the Personal Computer Memory Card International Association (PCMCIA) and the Japanese Electronic Industry Development Association, PCMCIA 2.0 establishes a standard for I/O cards in the same socket, moving users closer to the goal—plug-and-play compatibility between cards, regardless of origin.

Card Blanche

PCMCIA 2.0 is “the breakthrough we’ve all been waiting

for, because it creates a new bus for portable computers,” explains Ken Dulaney, marketing director for portable products at Grid Systems in Fremont, California. “We now have a standard, much like the AT bus standard, that we can use to create what amount to card cages in portable notebooks and pen-based computers. The freedom that people have when they add boards to their desktop we now have in notebooks and portables.”

Users can expect their options to open up dramatically over the next year as vendors rapidly bring to market a variety of modems, network adapters, and cellular and radio transmission cards compatible with the standard. “Until now peripherals have been a big problem for the manufacturer and the user,” adds Dulaney. “Every manufacturer has had to create its own modems and everything else. Now with everybody working toward the same goal, we’ll see a lot more peripherals for notebooks.”

The first vendor out of the gate was Intel, which introduced a 2400-baud modem selling in quantity to manufactur-

ers for \$200. Other vendors are offering memory cards, and Sundisk of Santa Clara, California, claims it will market a 16MB card early this year. “I fully expect these cards to become commonplace in no time,” says Everett Kaser, a software engineer who helped build Hewlett-Packard’s hot-selling HP95LX palmtop.

Price is still an obstacle, however. Intel’s 2MB flash memory card sells for \$375, while Sundisk’s card will cost users about \$75 per MB, or roughly seven to ten times the cost of disk drive storage. On the bright side, prices should drop dramatically as volumes ramp up.

Speed and Software Space

PCMCIA 2.0 also provides a standard way for users to execute software directly from the memory card, rather than their having to treat the card as a disk drive and transferring programs over to the system memory.

One advantage of this setup is a dramatic speed boost. A system with such a card “looks like it was instantly turned on,” notes Louis Hebert, product marketing manager for Intel’s flash memory division in Folsom, California.

The other benefit is a big savings on DOS memory. Poqet Computer of Santa Clara pioneered this approach with an early 1-2-3 card for its portable PC. “Normally 1-2-3 2.2 would take about 280K to 320K of system memory just for the program itself,” notes Bill Densham, director of PC Enhancements for Poqet. “The card reduces that system memory requirement down to about 35K to 50K.”

However, you shouldn’t necessarily expect to plug any

PCMCIA card into any system and have it work. You’ll need to add the appropriate drivers, as you would when adding a board to your desktop, or vendors will first have to modify their BIOS.

Vendors are working diligently to overcome this barrier as well. Intel has created a single-chip I/O controller, and systems featuring this chip

A Card-Carrying Standard

Benefits of PCMCIA 2.0 cards

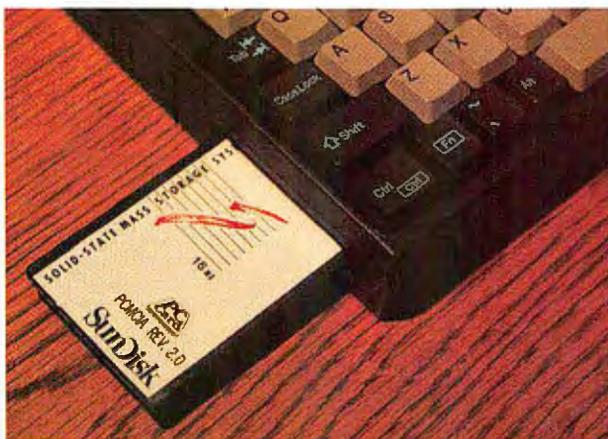
- Provide memory, modem, network connection, other functions—particularly for portable PCs
- Lightweight (1 oz.), small, rugged, low power draw
- Memory cards allow instant start-up and more memory for DOS applications
- IO and memory cards supporting Intel’s Exchangeable Card Architecture are interchangeable and compatible across systems



PCMCIA cards will enable the new crop of very lightweight PCs and palmtops to connect easily with corporate networks and data bases.

will wear an ExCA (Exchangeable Card Architecture) label that means they have achieved complete swappability. When that milestone is met, swapping cards on the road will be easier than changing boards in your desktop.

—John H. Mayer



A new standard for integrated circuit cards and drives provides for multiple functions—applications, memory, and I/O.

LOGICAL PRINTER SHARING

Justification

If one user prints 40 pages a day on an 8 page per minute laser printer, that printer will be in use for only 5 minutes per day! Logical Connections allow several users to easily share expensive printers and other resources, like modems and plotters. Choose the peripheral that you need from a pop-up menu.

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Versatility **LC Plus – 512Kb \$595**

All six ports of the Logical Connection Plus are automatically configured as parallel or serial, and input or output. Installation is a breeze. You just plug in your cables and run the installation software; the LC Plus will do the rest. Besides being very user friendly, the LC Plus processes data at blazing speed for any application. You can share modems and transfer files at 115,200 bps.

6 PCs or Printers/Any Combination



Practicality **LC – 256Kb \$395**

The original Logical Connection is still all the printer sharing device that most people need. The LC is ideal for printing of word processing and occasional graphics data. Its eight ports are: four bi-directional serial ports which can be set as input or output, two parallel inputs and two parallel outputs. Six users can share two parallel printers. The serial ports can also share modems.

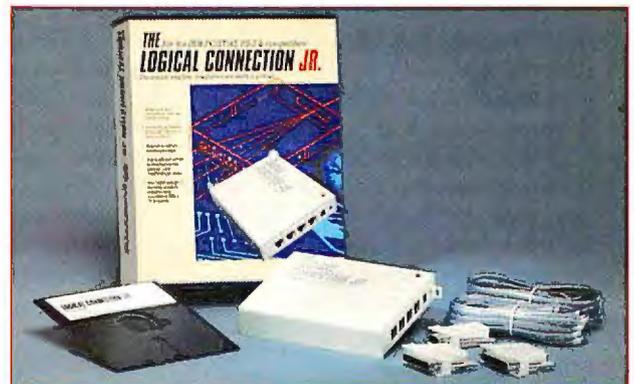
6 PCs to 2 Printers (Typical)



Simplicity **LC Jr. – 256Kb \$239**

Inexpensive modular cable, even hundreds of feet in length, can be used to serially connect up to four PCs to the Logical Connection Jr. at speeds up to 115,200 bps. Plug your existing parallel printer cable into the LC Jr. and it will automatically convert the data from serial to parallel for fast parallel printing. Multiple users can send data simultaneously since the memory will buffer and queue jobs on a first-in-first-out basis.

4 PCs to 1 Printer



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4660 Portland Road NE #108
Salem, OR 97305-1697

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Customer Support:
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Fewer PCs Made in United States

Screen Tariff to Accelerate Manufacturing Shift Overseas

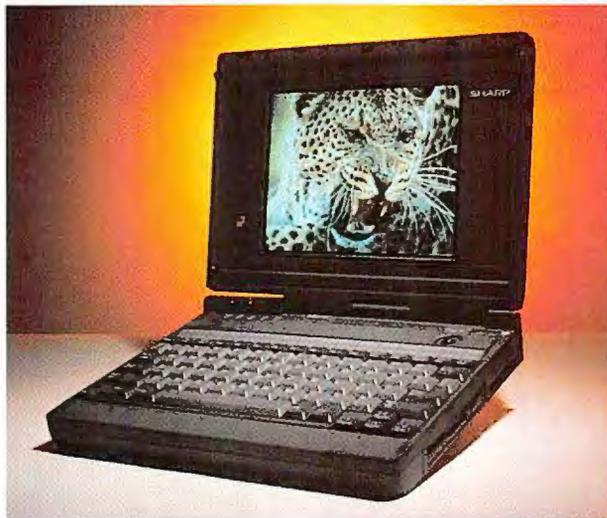
PC manufacturers howled last fall when the International Trade Commission slapped a stiff import duty on the active-matrix LCD screens that are now appearing in next-generation portables. Because only Japanese firms build these screens in volume, and the duty is waived on systems incorporating the screens, U.S. suppliers say they will be forced to move production overseas.

Customers won't feel immediate effects from this controversy. Almost all portables today employ passive-matrix LCDs, and no one expects active-matrix screens to be cost-competitive for a few years (today an active-matrix screen adds about \$1000 to system costs). But, vendors say, the import duty is another chapter in the saga of the exodus of PC production from the U.S.

Screening Out Competition

The tariff was imposed after the Commerce Department found Japanese firms guilty of selling active-matrix screens below cost in the United States (active-matrix technology is critical to next-generation computer, television, and imaging systems). Designed to protect a nascent U.S. display industry, the tariff adds a whopping 63 percent penalty to imported screens.

IBM, Compaq, Tandy, and Apple are appealing the decision, arguing that none of the small U.S. display manufacturers can deliver the panels in the quantities needed. By pushing up their costs, these suppliers claim, the tariff makes laptops and notebooks manufactured in the United States too expensive to compete in world markets. "It's not easy to understand why that is



Japanese Sharp Corporation is a leading color LCD screen maker. A display tariff may increase U.S. PC manufacturing abroad.

good for the United States," says IBM chair John Akers.

Apple has already shifted production of its notebook from Colorado to an Irish facility. IBM officials say they are ready to transfer production for future laptops to Japan. Compaq, which usually manufactures its new high-end systems in the United States, will build the portable 486C in Scotland.

Under Foreign Flags

"The computer business is basically offshore anyway," notes Ken Dulaney, marketing director for portable products at Grid Systems. Toshiba, NEC, and several other leading portable system suppliers are Japanese firms. And although Grid and its parent, Tandy, assemble some systems in the United States, many of their portable and desktop systems are made overseas.

"U.S. companies still have the premier design capability," adds Dulaney. "We still lead the world in microprocessors and disk drives. But once the systems are designed, their

components are packaged in kits overseas and are assembled here."

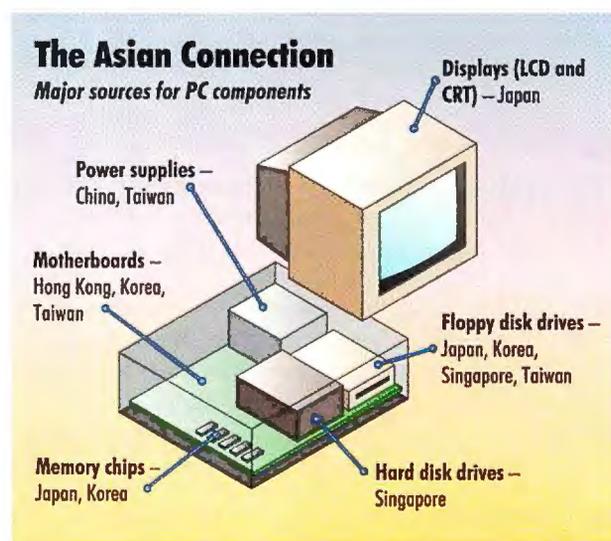
Close proximity to component suppliers is a key reason companies move manufacturing offshore. Most memory and logic chips are manufactured in Japan or Korea, most power supplies are built in Taiwan, most hard disk drives are built in Singapore, and 98 percent

of all flat-panel displays are made by Japanese firms (some of these are made by U.S. subsidiaries).

Increasingly, the strongest wind blowing manufacturers offshore is government regulation. "I've heard of people who have gone to Singapore to set up a factory and received all the government approvals in less than a week," remarks Bob Katzive, analyst for Disk/Trend in Mountain View, California. In the United States, that process can take two years.

Environmental regulation has grown particularly expensive as U.S. manufacturers face costs that are not a part of doing business in many other countries. "If you're building boards here, you're not allowed to just dump your waste in the bay," notes Mark Tomco, sales manager for motherboard manufacturer Silicon Valley Computer in Mountain View. "Pollution controls are very expensive, and they simply don't exist or are much less restrictive in other parts of the world." —John H. Mayer ☉

John H. Mayer is a freelance writer in Belmont, Massachusetts.



Apart from the CPU and software, most of a PC's parts today hail from the Pacific Rim, drawing U.S. manufacturers offshore too.

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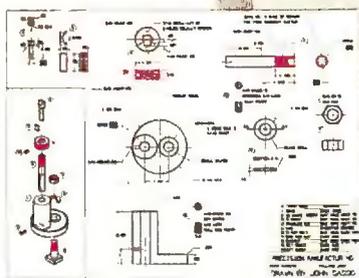
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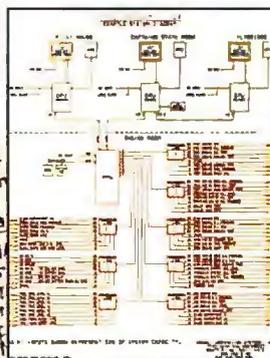
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PC Magazine 12/17/91



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The AST Bravo 486/25 and Dell System 320LT repeat as the most aggressively priced desktop and portable PCs in the November survey by International Data Corporation.

Best-Sellers

Leading PCs sold through traditional dealer channels

- | | | | |
|---|----------------------------|----|------------------------|
| 1 | IBM PS/2 Model 55 SX | 6 | Compaq Deskpro 386s/20 |
| 2 | IBM PS/2 Model 70 (20 MHz) | 7 | Compaq Deskpro 386n |
| 3 | Compaq LTE 386s/20 | 8 | IBM PS/2 Model 57 SX |
| 4 | NEC PowerMate SX, SX/20 | 9 | Compaq Deskpro 386s |
| 5 | IBM PS/2 Model 30-286 | 10 | IBM PS/2 Model 35 SX |

The PS/2 Model 55 SX still leads sales through the dealer channel, and IBM has five of the top-selling models, according to Storeboard/Computer Intelligence's October survey.

BARGAINS OF THE MONTH

Over the Counter

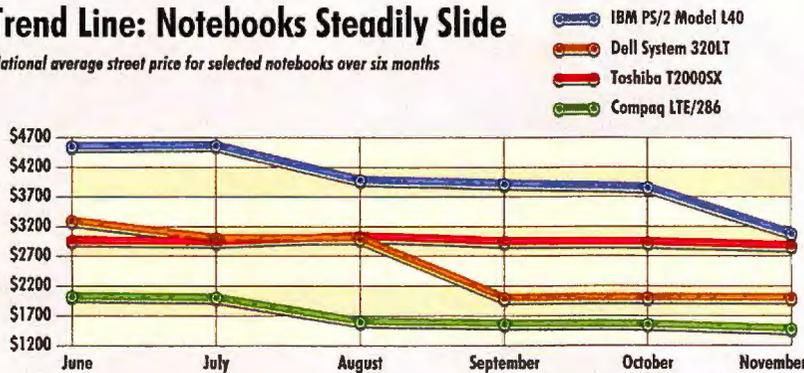
What you pay at retail stores for popular PCs

	Configuration				National					
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	List	Average	Boston	Chicago	Dallas Ft. Worth	
80386SX-based desktop PCs										
AST Bravo 386SX/20	20	2	40	VGA	\$1695	\$1301	\$1356	\$1356	\$1209	
Compaq Deskpro 386s	16	2	40	VGA	\$2299	\$1825	\$1935	\$1895	\$2021	
Compaq Deskpro 386s/20	20	2	60	VGA	\$2599	\$2064	\$2190	\$2141	\$2250	
Dell System 320 SX	20	2	40	VGA	\$1400	\$1400	\$1400	\$1400	\$1400	
IBM PS/2 Model 35 SX-043	20	2	40	VGA	\$2525	\$1900	\$1929	\$1961	\$1971	
IBM PS/2 Model 55-041	16	4	40	VGA	\$2745	\$2045	\$2105	\$1962	\$2213	
NEC PowerMate SX/20	20	2	42	none	\$1699	\$1510	\$1565	\$1566	\$1388	
80386DX-based desktop PCs										
AST Premium II 386/33	33	4	210	VGA	\$3795	\$2886	\$3036	\$3036	\$2812	
Compaq Deskpro 386/33L	33	4	120	VGA	\$6199	\$4907	\$5212	\$5099	\$5160	
Dell System 333P	33	4	100	VGA	\$2400	\$2400	\$2400	\$2400	\$2400	
Epson Equity 386/25 Plus	25	2	100	VGA	\$3199	\$2403	\$2525	\$2500	\$2338	
Gateway 2000 33-MHz 386VGA	33	4	200	VGA	\$2070	\$2070	\$2070	\$2070	\$2070	
IBM PS/2 Model 70-A61	25	4	160	VGA	\$5475	\$4125	\$4225	\$4259	\$4289	
Tandy 4033 LX	33	2	105	VGA	\$4398	\$4398	\$4398	\$4398	\$4398	
80486SX-based desktop PCs										
ALR BusinessVEISA	20	5	120	n/a	\$4295	\$3280	\$3268	\$3429	\$3525	
AST Premium II 486SX/20	20	4	80	VGA	\$3495	\$2703	\$2796	\$2797	\$2633	
IBM PS/2 Model 90 XP-OH9	25	4	160	XGA	\$6545	\$4903	\$5000	\$4819	\$5127	
80486DX-based desktop PCs										
AST Bravo 486/25	25	2	80	VGA	\$3495	\$2684	\$2796	\$2796	\$2643	
Compaq Deskpro 486/33L	33	4	120	VGA	\$8999	\$7093	\$7579	\$7379	\$7300	
IBM PS/2 90 XP-OKF	33	8	400	XGA	\$12495	\$9422	\$9521	\$9319	\$9788	
NEC PowerMate 486/25E	25	4	140	none	\$7399	\$5571	\$5875	\$5805	\$5184	
Portables/laptops										
AST Premium Exec 386SX/20	20	2	40	VGA-LCD	\$2395	\$2163	\$2201	\$2149	\$2200	
Compaq LTE/286	12	640K	20	CGA-LCD	\$1949	\$1474	\$1616	\$1506	\$1448	
Compaq LTE 386s/20	20	2	60	VGA-LCD	\$4799	\$3688	\$3843	\$3952	\$3800	
Dell System 320LT	20	2	40	VGA-LCD	\$1999	\$1999	\$1999	\$1999	\$1999	
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	\$3995	\$3081	\$3076	\$3129	\$3210	
NEC UltraLite 286F	12	1	20	CGA-LCD	\$2199	\$1564	\$1767	\$1667	\$1592	
TI TravelMate 2000	12	1	20	VGA-LCD	\$2369	\$1452	\$1265	\$1327	\$1304	
Toshiba T2000SX	16	1	40	VGA-LCD	\$3749	\$2862	\$3139	\$2907	\$3024	
Toshiba T2000Sxe	20	2	60	VGA-LCD	\$4499	\$3472	\$3518	\$3430	\$3629	

From an IDC survey of more than 180 computer dealers in eight metropolitan areas. Figures based on at least four price quotes for each machine. Prices are based on manufacturer's standard configuration without monitor.

Trend Line: Notebooks Steadily Slide

National average street price for selected notebooks over six months



Costs of notebook computers generally dropped substantially in the second half of 1991. Vendors are hoping to move users toward more expensive models—much lighter or more powerful systems with extras like bundled Windows software or fancy trimmings like color screens. But basic 286 and SX systems with LCD screens, which are very close to commodities, are caught in an unrelenting price war.

Metropolitan

City	Los Angeles	Miami/Ft. Lauderdale	New York	San Francisco Bay Area	D.C./Washington
	\$1297	\$1335	\$1288	\$1278	\$1252
	\$1829	\$1725	\$1780	\$1772	\$1796
	\$2058	\$2006	\$2017	\$1985	\$2018
	\$1400	\$1400	\$1400	\$1400	\$1400
	\$1850	\$1955	\$1845	\$1868	\$1986
	\$1943	\$2089	\$2059	\$2059	\$2115
	\$1555	\$1539	\$1439	\$1595	\$1523

\$2664	\$2989	\$2884	\$2861	\$2812
\$4977	\$4584	\$4773	\$4736	\$4896
\$2400	\$2400	\$2400	\$2400	\$2400
\$2302	\$2566	\$2373	\$2452	\$2255
\$2070	\$2070	\$2070	\$2070	\$2070
\$3979	\$4161	\$4106	\$4249	\$4216
\$4398	\$4398	\$4398	\$4398	\$4398

\$3168	\$3389	\$3221	\$3281	\$3350
\$2718	\$2753	\$2656	\$2635	\$2586
\$4772	\$4896	\$4909	\$5053	\$4893

\$2657	\$2753	\$2656	\$2649	\$2576
\$7222	\$6654	\$6929	\$6875	\$6895
\$9077	\$9597	\$9371	\$9646	\$9596
\$5232	\$5715	\$5549	\$5815	\$5362

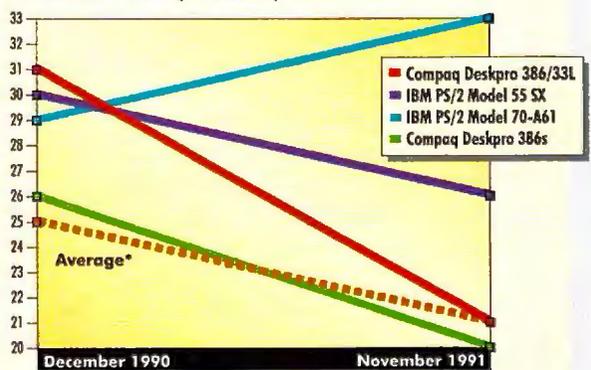
\$2096	\$2077	\$2017	\$2724	\$1957
\$1566	\$1459	\$1400	\$1516	\$1417
\$3692	\$3434	\$3582	\$3699	\$3674
\$1999	\$1999	\$1999	\$1999	\$1999
\$3021	\$3129	\$2996	\$3114	\$3149
\$1576	\$1566	\$1288	\$1714	\$1610
\$1608	\$1864	\$1179	\$1483	\$1738
\$2958	\$3143	\$2504	\$2921	\$2652
\$3624	\$3761	\$3251	\$3534	\$3283

PC Futures: End-of-the-Year Clearance

Despite the industry's dog-eat-dog price competition, the two Bargains of the Month¹ are repeats: AST's Bravo 486/25 among desktops, Dell's System 320LT among portables. IBM's PS/2 Model 55 SX still dominates sales through dealers, and has been joined on the best-seller list by its likely successor, the Model 57 SX. With the basic SX notebook turning into a commodity, it's no surprise that prices continue to fall substantially. In a typical year, both desktop and portable prices drop noticeably during the fourth quarter, when high volumes of PCs are purchased, and then rebound slightly in the first quarter. In early 1992, given the softness in the PC sales arena, there may be no price rebound. Slowing overseas sales will put additional price pressure on manufacturers here. However, street prices aren't falling as quickly as list prices indicate, because discounts have tightened during the past year.

System Discounts Slim Down

Percent discount from list price to street price



As a rough rule of thumb, PC street prices average one quarter less than list prices. This discount narrowed in the past year, as many manufacturers cut list prices more than dealer prices (which are the real basis for what you pay on the street). Some PCs, such as IBM's aging Model 70 line, bucked this trend with heavier discounts.

¹ Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.
* Average of all Marketplace models.



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Your new high performance ZEOS upgradables come from a family of systems which have received *Eight PC Magazine Editor's Choice Awards.* And don't forget, for a limited time only, when you purchase any new ZEOS Windows system you'll also receive Lotus 1-2-3 for Windows plus *Ami Pro 2.0.* So why not give us a call right now, 800-423-5891!

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Circle 316 on reader service card

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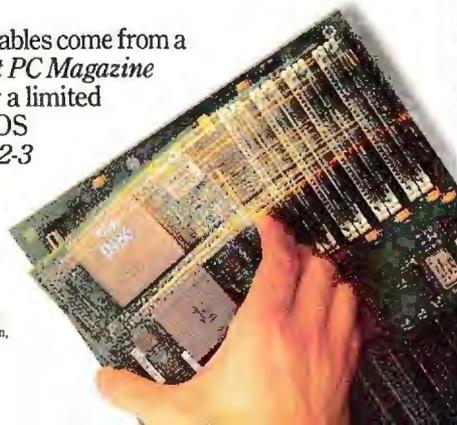
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When Buyers Rate ZEOS:

Support: How Mail-Order Vendors Stack Up

What Buyers Say	CompuAdd Corp. CompuAdd 325 (with 32K-byte cache) \$2,881	Dell Computer Corp.* Dell System 325P (no cache) \$3,144	Gateway 2000 Gateway 2000 25MHz 386 (with 80M-byte hard drive, 32K-byte cache) \$2,090	Northgate Computer Systems Inc. Northgate Elegance 386/25 (with 64K-byte cache) \$2,839	Zeos International Ltd.* Zeos 386-25 (includes AmPro, 1-2-3 for Windows, no cache) \$2,540
How long does it take to get a support representative on the phone? (most frequent answer)	1 to 5 minutes	1 to 5 minutes	more than 30 minutes	1 to 5 minutes	1 to 5 minutes
Technical competence of support representative (10 is best)	7.5	8.1	8	7.8	8.1
How long does it take for the vendor to solve your problem? (most frequent response)	Immediate	1 to 2 days	2 days or more	Immediate	Immediate
If your job depended on it, would you recommend buying more PCs from this firm?	12 yes 1 no	10 yes 2 no	12 yes 2 no	10 yes 5 no	15 yes 0 no
Overall rating for service and support (10 is best)	8.3	7.8	7.5	7.8	8.6

NOTES: Customer satisfaction results were compiled from PC Week's survey of PC managers whose organizations have purchased mail-order PCs. 15 customers of each vendor were surveyed.

Prices and specifications shown were supplied by vendors, each of which was asked for a quote on its lowest-priced 25MHz 386 machine with 4M bytes of RAM, dual floppies, a 100M-byte hard drive, 14-inch Super VGA monitor, keyboard, mouse, Windows and DOS 5.0. Any changes to the configuration or no-cost options are shown. Prices were gathered by calls to each vendor between Oct. 3 and Oct 14, and include tax and shipping charges.

*System is upgradable.

Chart Reprint from October 21, 1991 issue of PC Week. Reprinted by permission.

ZEOS Rates #1

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to buy anything else.

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Circle 313 on reader service card



ZEOS® 386SX-20! Only \$1195.

INCREDIBLE 20MHZ ZERO-WAIT PERFORMANCE \$1195!

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Your new ZEOS 386SX-20 also includes the most advanced SX motherboard available anywhere. Because we've not only added incredibly fast 53ns DRAM, we've also integrated the hard and floppy drive controllers *plus* the serial, parallel and game ports *right on the motherboard!* This results in even greater reliability *and* expandability.

ZEOS SX SYSTEMS RATED #1!

After all, the ZEOS 386SX-20 comes from a family of *Editor's Choice '386* systems. And most recently, in PC Magazine's Service and Reliability issue, ZEOS systems received the #1 SX rating overall. When you receive your new ZEOS 386SX you'll see why ZEOS is #1. Take our case and power supply for instance.

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You save space and still have room for lots of future expandability! And the components in your system will last longer too because ZEOS gives you not just one, but *two cooling fans*. After all, the cooler your system runs, the longer it will last. Now that's uncompromising value. That's ZEOS value.

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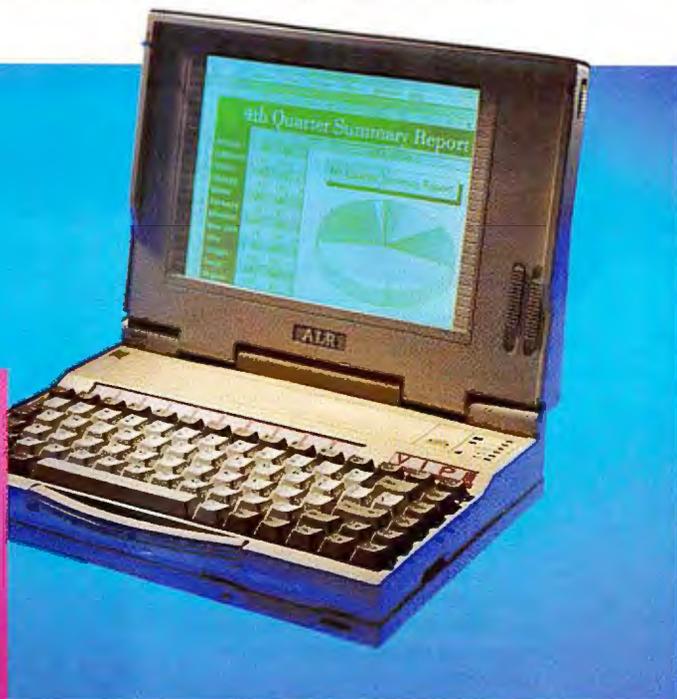
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PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

ALR's Modular Notebook

VIPs offer a do-it-yourself upgrade path to 486 power.



A panel above the keyboard is the door to easy upgradability for notebooks in the VIP M line from ALR, allowing you to step up to 486 processors.

Mike Hogan

Modularity in PCs is all the rage—matched only by the interest in notebooks. Advanced Logic Research (ALR) has found a way to pull the two together in its VIP line of expandable notebooks.

One day you may be able to upgrade 486-based notebooks by swapping processors; not so 386 notebooks. And pulling chips is not for the faint of heart or fat of fingers anyway. ALR's way is easier. Start out with its inexpensive 20-MHz 386SX, the VIP M 386SX/20. By swapping out the CPU card that sits under a panel above the keyboard, you can turn the notebook into a VIP M 486SX/20 or even a VIP M 486DX/25,

which runs about three times as fast as a 20-MHz 386SX.

More Ways to Upgrade

Beneath the CPU panel, you'll find a bay for an optional MNP-5 fax-modem card that lets you send or receive faxes at 9600 baud and data at 2400 baud. Another socket below accepts either a SCSI or scanner adapter. Down another level, a socket on the motherboard allows you to snap in a data compression module that doubles hard disk capacity for most applications. Remove another panel on the underside of the notebook, and you can quickly boost memory to 16MB with standard SIMMs.

In addition to the standard 4MB of memory and 1.44MB

floppy, you can choose 18ms 40MB or 60MB hard drives or a 16ms 80MB drive. All VIPs have a 9-inch diagonal paper-white VGA display supporting 32 shades of gray and a graphics adapter that supports 256 colors at 1024 by 768 on an external display. All VIPs sport 82-key keyboards with full-size, fully spaced keys whose 3mm travel will make you think you're typing on a desktop.

The VIPs accept an optional nickel-metal-hydride battery that gives 25 percent longer battery life than nickel-cadmium. But even with their standard 16 AA nickel-cadmium batteries, you should achieve almost 4 hours of uninterrupted computing. The AC adapter,

which measures 3½ by 5½ by 2 inches and weighs about a pound, recharges within 2 hours whether or not you're using your notebook.

These machines are a little beefy compared to the new 5½-pound notebooks, but at 7.2 pounds and 11½ by 8½ by 2½ inches, they aren't briefcase busters. They won't bust your budget either. The SX is about the same price as most other SXs, while the 486 and the low-power SL models are \$500 to \$1200 cheaper than comparably configured systems. ☉

Mike Hogan is a senior editor for PC World.

SNAPSHOT

VIP M Line

This line lets you change processors and peripherals.

KEY FEATURES

- 386SX/20, 486SX/20, 486SX/25 CPU cards
- Optional 9600-baud fax card with 2400-baud modem
- 7.2 pounds
- Paper-white VGA display supports 32 shades, 1024 by 768 external monitor

AVAILABILITY

January 1992

PRICING

40MB VIP M 386SX/20 \$3495; 40MB VIP M 486SX/20 \$3995; 40MB VIP M 486DX/25 \$4495; add \$200 for 60MB hard drive, \$300 for 80MB drive

Advanced Logic Research

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Multi-Link™ Serial/parallel device for twelve or

more users. Expandable, through dedicated high-speed link, up to 384 any-to-any, user-selectable ports, over 4000 feet. Perform printer/plotter sharing, modem/FAX sharing, PC-to-PC file transfer and more.

- 12 concurrent high-speed ports — 8 serial, 4 parallel
- High-speed link — up to 32 Multi-Link devices — 384 total ports!
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- Uses standard parallel PC-to-printer cables

12 any-to-any ports; buffered from 256 KB to 4 MBstart at \$795

GENERAL



PSU-82C/SP

Programmable sharing units for both serial/parallel printers, plotters and PCs. Designed for CAD/CAE, high-level graphics, Desktop publishing or general applications.

- 4 concurrent serial and 4 parallel inputs (SP)
- 8 concurrent serial inputs (C)
- 1 serial and 1 parallel output
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- Separate baud rate, flow control, parity and messages for each port
- Pop-up menu software for easy printer/plotter selection
- Easy menu-driven configuration and set-up
- Prompt and response messages for plotter applications
- Support all laser printers including Post-Script® printers and all types of plotters.

8 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$595



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Low-cost, expandable, all-parallel, high-speed printer sharing system. From one to 32 PCs independently share up to three remote and one local parallel laser/dot-matrix printer or plotter.

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Expansion Module with Printer Select Switch\$149 ea.



QwikShare® II

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- 6 RS-232 serial inputs - RJ-11 connectors
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- Expandable memory to 2MB using SIMMS
- Input speeds up to 115K baud

6 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$295

BASIC



QwikShare®

Complete, plug-n-go, "no-wait" sharing system. Up to six IBM PCs or compatibles can share a serial laser/dot-matrix printer or plotter. Each system contains: sharing unit; super-fast spooling software; three — 9- and 25-pin connectors; four — 25 ft. PC cables; one — 5 ft. printer cable & connector. Compatible with most popular graphics, word processing and spreadsheet software including Microsoft® Windows™.

6 inputs; 1 output;\$195

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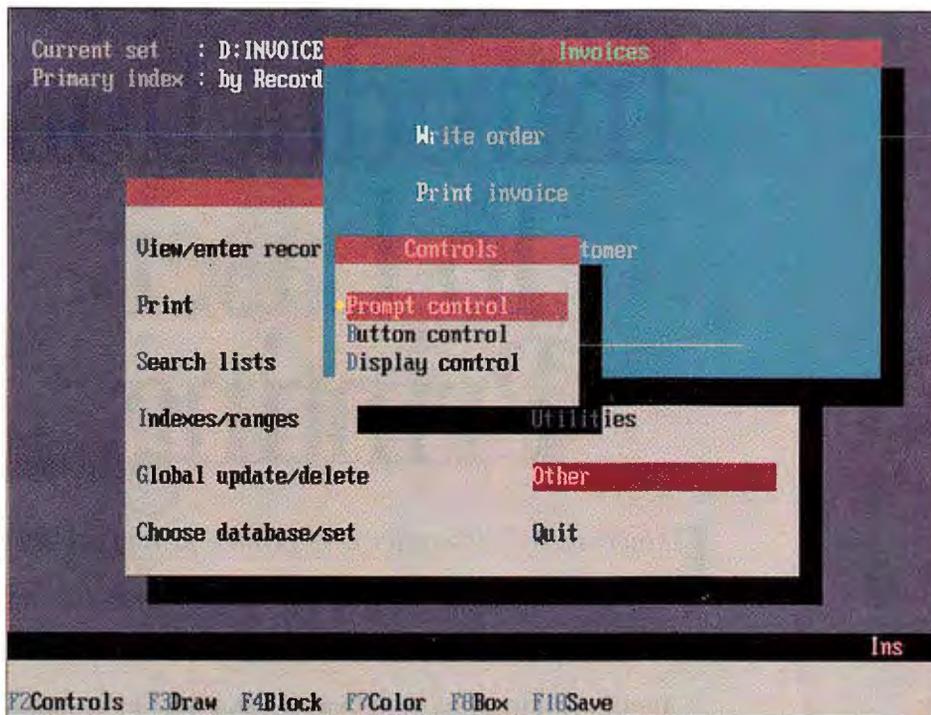
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Circle 325 on reader service card

Alpha Four Joins the Network

Transparent network support and a script language make this personal data manager a robust multiuser tool.



You can create and edit dialog boxes in Alpha Four 2.0, although you'll miss mouse support.

Lincoln Spector

With its dBASE file and syntax compatibility, menu-based interface, and near-full relational powers, *Alpha Four 1.1* was a good choice for non-networked users who wanted to handle data the dBASE way without writing code. By adding network support and a simple scripting language, Alpha Software has made *Alpha Four 2.0* a viable tool for work groups, too.

Unlike past versions, *Alpha Four 2.0* allows you to set up a multiuser application without even thinking about it. According to Alpha Software, all you do is put the network version of *Alpha Four* on your LAN, and the required file and record locking will happen automatically (though you will have to set up security restrictions).

Alpha Four even updates on-screen data at set intervals, so that one user will see another's changes shortly after they happen.

Following the Script

Alpha Four still doesn't let you code complex applications, such as a corporate accounting system, but managing a small business inventory is no problem. In addition, you can now create "scripts"—powerful macros that you can run from anywhere in the program. You can record or write scripts, make scripts call other scripts, use If and Case statements, store information in memory variables for future use, and even draw dialog boxes with prompts and buttons.

But don't put too much into a script, or you may get lost. The scripting language notes

the keystrokes rather than what the keys do, which means your code will say something cryptic like "LFS" when it means something simple like "Layouts/Forms/Select." If you really get stuck, though, it's easy to call a more programmable data manager, such as *dBASE IV* or *Fox Pro*, from inside a script.

All this is possible thanks to version 2.0's improved memory management. When you shell to DOS or another program, almost all of *Alpha Four* is removed from main memory to give the other program room—so you'll get fewer annoying "out of memory" errors.

Colorizing an Old Style

Unfortunately, the *Alpha Four* user interface shows its age. The full-screen, hierarchical menus and complete lack of

mouse support make this program unnecessarily clumsy (you'll really want a mouse when you design a form or dialog box, for example). And you still have to use a statement-building query tool instead of the easier query-by-example.

On the bright side, the program lets you do great things with color. You can assign colors to 20 parts of your screen, but you can play with the VGA color palette, making your copy of *Alpha Four* as lovely or ugly as you like.

No matter what colors you use, you'll find *Alpha Four 2.0* a more powerful and practical program than previous versions. You wouldn't want to automate your whole company with it, but this former personal data base is now a great work group tool. ☉

Lincoln Spector is an associate editor at PC World.

SNAPSHOT

Alpha Four 2.0

This dBASE-oriented personal data manager can now manage work-group data on a network.

KEY FEATURES

- Transparent network support
- Powerful scripting language
- Better memory management
- Full color control

AVAILABILITY

December 1991

PRICING

Single user and LAN pack \$549; multiuser editions (required in addition to LAN pack): three-pack \$749, five-pack \$1249, 30-pack \$4995

Alpha Software

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Reader service no. 765

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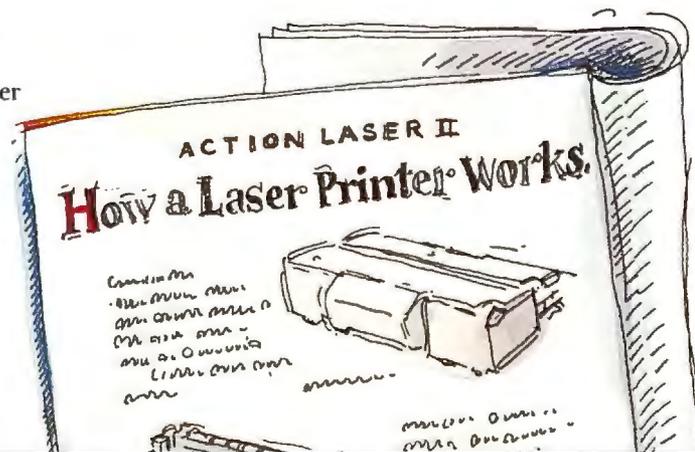


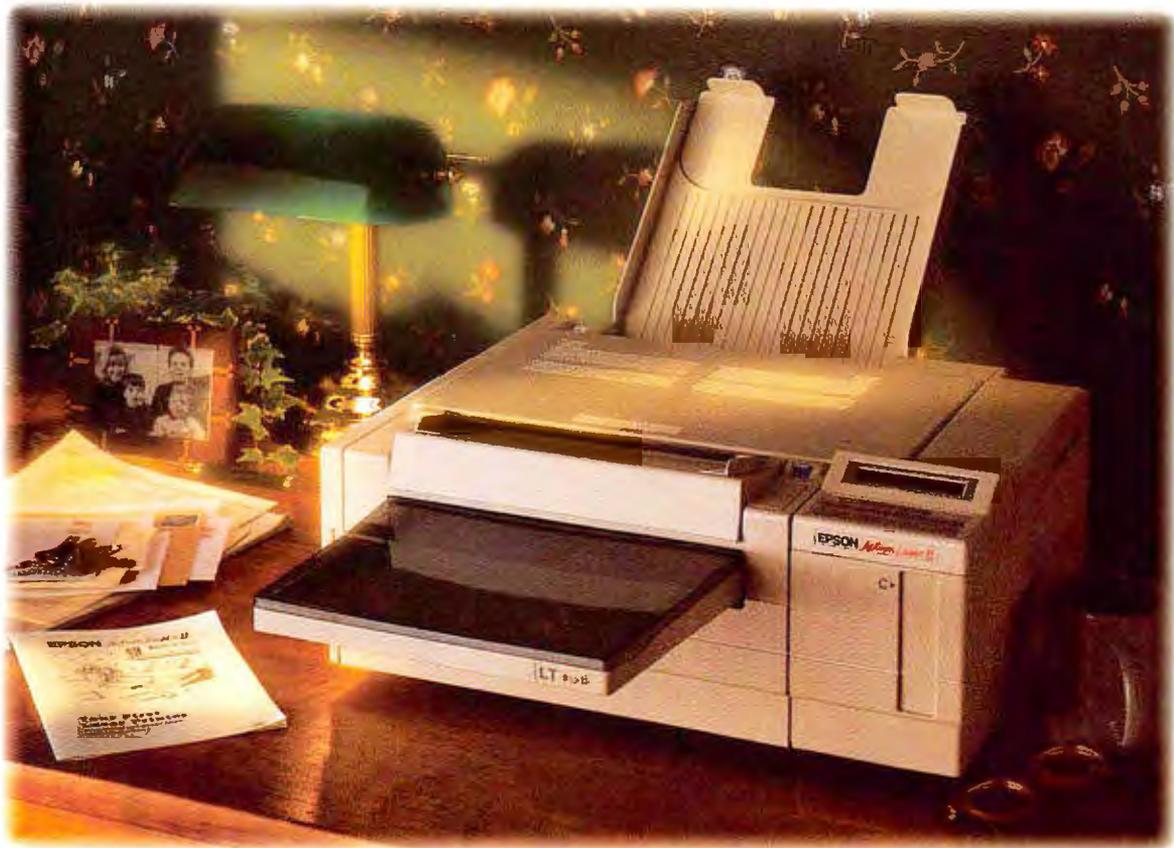
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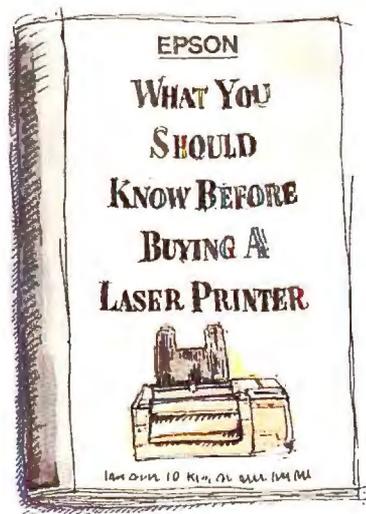
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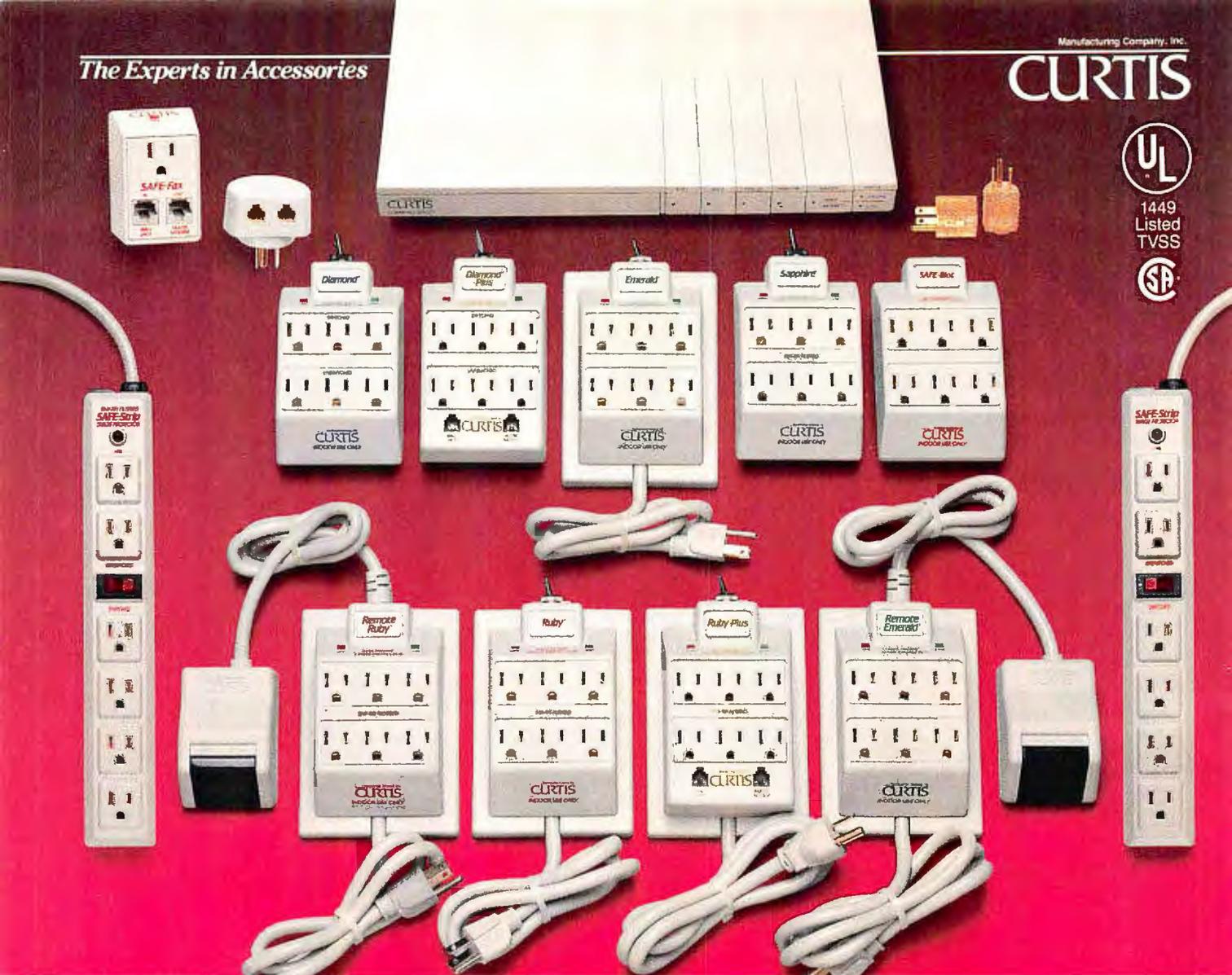
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PRODUCT OUTLOOK



Edited by RUSSELL GLITMAN

Signature

Sign Up for WYSIWYG Word Processing Without Windows

Signature, the word processing successor to XyQuest's *XyWrite* and IBM's *DisplayWrite*, preserves many features and keystrokes from its ancestors but adds such welcome capabilities as WYSIWYG fonts and a graphical interface.

Like *DisplayWrite 5*, *Microsoft Word 5.5*, and many other non-Windows word processors, *Signature* is a text-based program with graphical interface attributes like scroll bars, pop-up dialog boxes, pull-down menus, mouse support, and clipboard cut-and-paste editing. It simplifies learning and accelerates many tasks while maintaining overall performance (like *XyWrite*, *Signature* is acceptably speedy on an 8088-based laptop).

The \$495 package moves a considerable step beyond its peers with its editable WYSIWYG graphics mode, which gives you Bitstream Speedo fonts that look the same when you print them as they do on your screen.

IN BRIEF

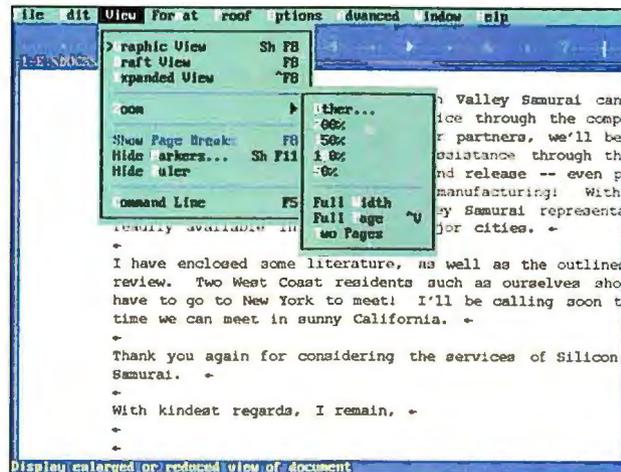
Signature

Designed as an upgrade for both *DisplayWrite* and *XyWrite* users, this fast and capable DOS word processor offers true WYSIWYG fonts in an editable graphics mode.

Xyquest

44 Manning Dr.
Billerica, MA 01821
508/671-0888,
508/671-0858 (fax)

Reader service no. 637



Signature adds WYSIWYG fonts and a graphical interface while retaining many *XyWrite* and IBM *DisplayWrite* keystrokes and features.

You can write and edit in this mode without giving up too much speed, and its graphics import and placement functions support frames and text wrap. Additionally, you can zoom in to scrutinize detail, and back out for whole page views. Another option is an expanded view (like *XyWrite*'s) that shows editable format codes.

Checking the Checklist

Signature meets the standard word processing checklist: style sheets, an outliner, simple page layout functions, undelete function, mail merge, text and program macros, a spelling checker, and a thesaurus.

Accelerator keystrokes and command line options can bypass the menus. *Signature* includes *XyWrite*'s handy split-screen feature for as many as nine windows, imports and exports files in formats of approximately three dozen word processors, and supports most printers.

For work group use, the package runs on major local area networks and supports redlining to track changes.

XyQuest teamed up with IBM to develop *Signature*, only to have IBM abandon the effort just short of launch when it dissolved its Desktop Software group last fall. Nonetheless, the effort attracted a flock of third-party add-ins such as grammar checkers and text searchers, which can be integrated into *Signature* menus—so don't let IBM's cold feet deter you.

Signature will meet the needs and expand the horizons of *XyWrite* and *DisplayWrite* users, and its blend of speed, WYSIWYG fonts, and sensible interface may draw other converts who are not ready to embrace *Windows*.

Signature requires 512K of RAM and a hard disk with 5.5MB of memory available. Upgrades are available for \$119 from *DisplayWrite*, or \$99 from *XyWrite*.

—Peggy Watt

INSIDE PRODUCT OUTLOOK

92 **386MAX, BlueMAX 6.0** Memory managers boast increased flexibility plus ease of use and installation.

96 **Backpack Tape Drive** Four-pound portable drive stores up to 250MB and doesn't require a valuable expansion slot.

98 **SL007 Notebook Computer** The 386 notebook's unique encryption chip keeps data secure.

102 **MicroPhone II for Windows 2.0**

Communications package adds dialing directory, automatic scripting, and a new low price.

104 **14.4EX External Modem** Intel's versatile external modem supports speeds up to 14,400 baud.

106 **Writer's Toolkit, American Heritage Dictionary, Webster's Dictionary, Word for Word/Professional 5.0** Four hot new utilities for on-line scribes.

109 **Master 486SX-25, Legacy 486SX-25** Arche's entries in the 486SX sweepstakes feature Intel's new 25-MHz chip.

111 **Diconix 180si** Kodak's portable printer: low price, less weight, with more speed and functions.

111 **Epson ActionLaser II** An upgradable laser printer at a dot matrix price.

LitePro, LitePro LS, Mport 433/Mpression

The Color LCD Projection Connection



Weighing just under 20 pounds, the LitePro LS includes a 216mm lens, 400-watt light source, and a 3½-inch floppy drive.

LCD projection systems are a relatively simple way to present color or gray-scale computer-created images. You just hook your PC to a panel and start the show—no overhead transparencies, no expensive slides, no bulky monitors.

Unfortunately, that still leaves an overhead projector to cope with. Not anymore. In Focus Systems' new LitePro LCD projector (\$6995) combines a passive-matrix, color

LCD display and an overhead projector in one unit. This luggable, 19-pound, rectangular box features a 216mm lens and a 400-watt light source and acts very much like a monitor, accepting images from your graphics card.

The pricier LitePro LS (\$8495) comes with In Focus Systems' LiteShow II software/hardware built in. Slightly heavier than the LitePro, the LS includes a 3½-

inch drive and software for converting graphics files into In Focus Systems' proprietary TIFF-like format. Both the LitePro and LitePro LS run on AC power only, and support over 4900 colors at 640 by 480 resolution.

Taking another approach, Micronics Computers offers an active-matrix LCD projection package consisting of a 33-MHz, 486-based portable computer—the 15-pound Mport 433 (\$5995)—and a color or monochrome LCD projection panel, the Mpression. The Micronics system requires an overhead projector for LCD presentations, but since the \$6995 Mpression color LCD panel is active matrix, its image appears in more vivid color than passive-matrix ones. The Mpression color LCD has a standard VGA resolution of 640 by 480 and can display 256 colors from a palette of 187,000. The Mpression monochrome panel is \$995.

The Mport 433 provides the graphics controllers and power for the Mpression LCD panels, which are connected via a proprietary LCD port. The LCD connection feeds the

computer's digital signal directly into the LCD panel. You can hook up competing LCD panels to the computer's VGA port, but Micronics panels work only with Micronics computers. —Jeff Bertolucci

IN BRIEF

LitePro, LitePro LS, Mport 433/Mpression Panels

The LitePro models pack a color LCD panel and projector into a luggable, 19-pound box.

In Focus Systems

7770 S.W. Mohawk St.
Tualatin, OR 97062
800/327-7231,
503/692-4968 Oregon,
503/692-4476 (fax)

Reader service no. 650

The Mport/Mpression combo gives you a 486 portable and an active-matrix LCD panel for vivid projections.

Micronics Computers, Inc.

232 E. Warren Ave.
Fremont, CA 94539
800/659-5901,
510/651-2300

Reader service no. 651

386MAX, BlueMAX 6.0

Improved Memory Managers Aren't Just for the 386

Ease of use and installation, improved memory management, and increased flexibility characterize the latest versions of 386MAX and BlueMAX (the PS/2 version) from Qualitas.

One of the most welcome enhancements is the incorporation of Qualitas' Move'em utility into 386MAX. This allows resident programs to load high on any machine with EMS 4.0 memory, and on 286 PCs with the Chips and Technologies LeAP or NeAT chip sets.

386MAX and BlueMAX 6.0 also support DPMI, the DOS Protected Mode Interface. Applications that use a DOS extender work better with DPDI, which takes full advantage of all the memory in your 386 or 486 computer.

386MAX and BlueMAX now allow expanded and extended memory to be allocated on demand from a common pool. The maximize utility, which optimizes use of high memory, is also more flexible; you can choose an automatic installation or a manual con-

figuration process that allows tweaking.

The latest versions are especially good at rearranging the contents of high memory to provide the largest possible contiguous space for drivers and TSRs. A feature called VGAswap can move VGA or EGA BIOS ROMs downward in memory, leaving more room for the EMS page frame. On Compaq machines, 386MAX can free 32K of additional high memory for TSRs and drivers.

All in all the new versions are a big step forward in ease

of use, flexibility, and memory management. 386MAX retails for \$99.95, BlueMAX for \$124.95, and upgrades are \$29.95. —Brett Glass

IN BRIEF

386MAX, BlueMAX

An easy way to get more memory is the promise of 386MAX and its PS/2 cousin, BlueMAX 6.0.

Qualitas, Inc.

7101 Wisconsin Ave.
#1386
Bethesda, MD 20814
800/733-1377,
301/907-6700

Reader service no. 644

Do You Make These Six Common Mistakes On Your Taxes?

Six common mistakes can cause you big headaches on your taxes. An oversight here, an omission there. From unnecessary tax payments to full blown IRS audits -- you can end up paying too much ... or worse.

But now, using TurboTax and your personal computer, you can avoid these simple but costly mistakes:

1 The Arithmetic Error

Today, even the simplest forms contain complex calculations. And with all the late-night scrambling, an innocent mistake could cost you plenty.

2 The Transcription Error

With all those numbers being juggled from schedule to schedule, it's no wonder the figures are so often transcribed incorrectly or entered on the wrong line.

3 The Omitted Form

Even "ordinary" returns require anywhere from six to a dozen forms to complete. It's easy to miss one ... or end up rushing all over town to find the one you need.

4 The Misinterpreted Instruction

At best, IRS instructions can be tough to understand. At worst they can be mind-boggling. What you need are clear directions in plain English.

5 The Overlooked Deduction

You'd have to be a professional tax preparer to know all the deductions you're entitled to. If you miss just one, it could cost you hundreds of dollars.

6 The Exceeded Guideline

The fastest way to trigger an IRS audit is to exceed the "normal" range on one of your deductions. You need to know what the IRS looks for on a line-by-line basis.

When you do your taxes with TurboTax, mistakes like these are virtually impossible. And filing your taxes couldn't be easier.



America's #1 Tax Software

TurboTax is America's #1 best-selling tax software -- over six million returns were filed with TurboTax last year! With TurboTax on your PC (or MacInTax on your Macintosh), you can completely and accurately prepare your income taxes in just a few hours.

Here's how easy it is!

- A. Gather your records and receipts.
- B. Enter your data into TurboTax just once.
- C. Print out, sign and drop in the mail.

TurboTax does the rest. Even if your records and receipts aren't in any particular order, TurboTax guides you through step-by-step

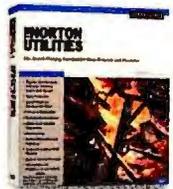
questions and shows how to enter every item. And like a good tax advisor, TurboTax helps you identify every deduction you can claim.

Then TurboTax makes all the calculations, checks for accuracy and consistency, and transfers every number to the proper lines on the proper forms. And, TurboTax prints every form you need in IRS-approved format right on your own printer -- ready to sign and mail (or file electronically, if you prefer, for a faster refund).

PC Magazine says TurboTax "makes doing your taxes almost fun." Try it for yourself. Free. We know that if you try it, you'll never go back to doing your taxes the old-fashioned way. So we'll send you TurboTax on an unconditional free trial basis: *If you don't like it, you don't pay for it!*

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Norton Utilities

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ChipSoft

Rush me a FREE trial copy of TurboTax ASAP (I pay just \$8.50 shipping now). I'll try it free for 30 days, and if I don't like it for any reason, I'll just send it back and owe nothing. If I do keep it, I won't be charged until after my 30-day free trial.

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DayBook+, Make Your Point, Instant Database

PocketBooks: Windows Programs With Bargain Prices

Asymetrix's *PocketBooks* is a new software series that fits your time and budget. These three simple, inexpensive, no frills *Windows* applications include an entry-level data base program, *Instant Database*, a presentation package, *Make Your Point*, and an up-

date to the company's calendar program, *DayBook+*.

DayBook+ (\$49.95) is a quick and easy program for managing your schedule. An upgrade of *DayBook 1.5*, it includes an alarm to notify you of upcoming appointments, a weekly report that flags schedule conflicts, and an auto-dialer.

Instant Database (\$59.95) is for the small business or home user who wants to create customer lists, mailing labels, and business forms. The program features two modes—one for creating a form, the other for inputting, searching, and sorting data—and comes with predesigned forms.

Need to develop business presentations fast? *Make Your Point* (\$59.95) comes with a collection of style templates, clip art, and color and pattern

designs for creating overhead presentations or computer-based demos. Select a template, type in your data, and you're done. The product targets the business user who wants to develop simple pre-

sentations and can't be bothered with a complex, full-featured graphics program.

PocketBooks won't overwhelm you with power, but if you need to use these applications only occasionally, or if you don't have time to learn a complex software package, you may find them useful.

—Jeff Bertolucci

IN BRIEF

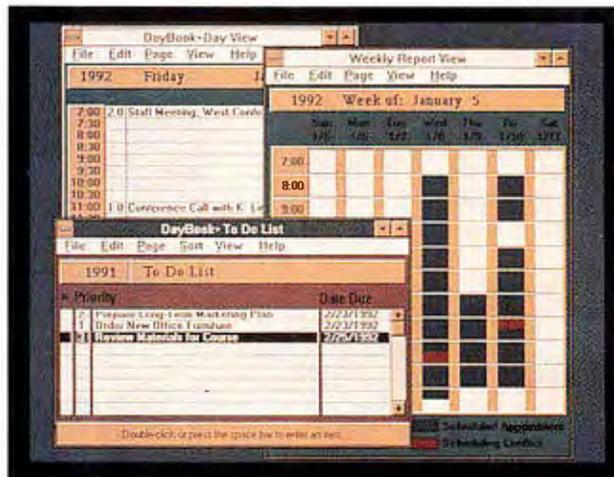
PocketBooks

WINDOWS Three simple, inexpensive applications give you entry-level data base, scheduling, and presentation tools.

Asymetrix

110 110th Ave. NE #700
Bellevue, WA 98004
206/637-1500,
206/454-3071 (fax)

Reader service no. 642



Asymetrix's *DayBook+* lets you create daily, weekly, and monthly to-do lists that keep track of assignments and meetings.

TEAC Combination FD-505 Half-Height, 5/4-Inch Floppy Drive

Two-in-One Floppy Replaces Single 5 1/4-Inch Drives



The TEAC Combination FD-505 drive saves space by combining 3 1/2- and 5 1/4-inch floppy drives into a single half-height, 5 1/4-inch package.

If you have PS/2s around the office or if you're carrying a notebook out on the road, a 3 1/2-inch 1.44MB drive for your desktop would sure make life easier.

Unfortunately, plenty of desktop PCs still have only one floppy drive—a 1.2MB 5 1/4 inch. If that describes your

machine, and you want to keep your desk free of expensive external drives, TEAC America's new Combination FD-505 half-height, 5 1/4-inch floppy drive presents a smooth solution.

This innovative drive pairs both standard floppy drives—5 1/4 inch and 3 1/2 inch—in one

unit that slides right into your half-height 5 1/4-inch bay. Best of all, the two drives together have a single power connector and one data connector.

TEAC pulls off this slick trick by combining two new drives, which it sells as separate components only to systems vendors. Its new 3 1/2-inch floppy drive is just a half-inch high, which makes it the slimmest drive around. Place this featherweight on top of TEAC's trim little third-height, 5 1/4 inch, fit it with a single bezel, and you've got two drives in one. And the 5 1/4-inch drive, unlike other drives of comparable height, works just like a 3 1/2: When you insert the disk it clicks into ready mode; when you press

the button, the disk ejects.

At a list price of \$249, the TEAC Combination FD-505 does cost slightly more than two separate floppy drives. But if you're short on storage bays, this innovative dual drive is your best choice.

—Rex Farrance

IN BRIEF

Combination FD-505

TEAC's trailblazing dual drive handles 5 1/4- and 3 1/2-inch floppies in one half-height bay with one power connector and one data connector.

TEAC America Inc.

Data Storage Products
7733 Telegraph Rd.
Montebello, CA 90640
213/726-0303,
213/727-7672 (fax)

Reader service no. 660

Breaking the page barrier.



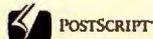
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Turbo starts at \$2,249*. Ideal for shared printing, the 16ppm XL Turbo goes for \$3,649*.

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1-800-527-3500

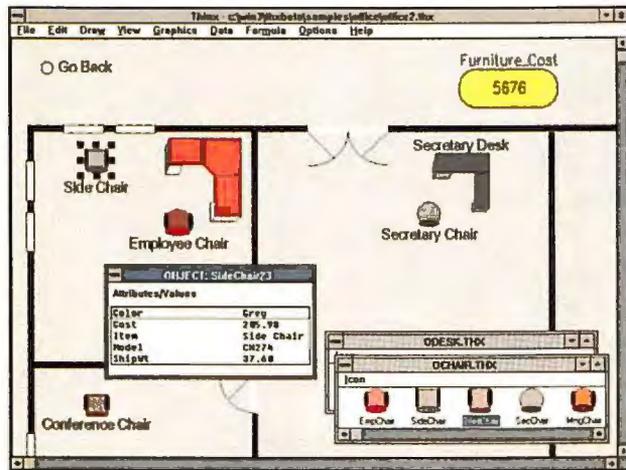

**TEXAS
INSTRUMENTS**

71842

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ThinX 2.0

A Graphical Way to Manage Data



To create visually oriented projects, ThinX 2.0 has a spreadsheet-style data editor, file linking, enhanced formula capability, and DDE support.

ThinX is a unique Windows data manager that blends elements of a drawing program, data base manager, and spreadsheet utility to provide executives with a visual way to organize resources and present data. It's especially suitable for in-house developers who need to set up easy-to-use, graphical applications for managers or for an entire work group.

You can use ThinX to develop such things as "smart" organizational charts that include information on work in progress, or to plan and implement projects that are primarily visual in nature, such as managing facilities, creating an office layout, or designing a manufacturing floor.

ThinX is based around objects, which are presented as graphic symbols of data. Each object represents an individual record, and has definable fields called attributes.

An object can represent anything you might keep track of in a data base table or spreadsheet, such as inventory, raw materials, employees, and so on. Attributes define the objects, classifying

them by such aspects as weight, price, salary, or title.

Double-clicking on an object displays its underlying

Backpack Tape Drive

Any Parallel Port in a Storm: This Tape Drive Travels

With Micro Solutions' portable 4-pound Backpack tape drive, you can back up almost any desktop or laptop quickly and efficiently. You don't even use a precious expansion slot. Simply plug the Backpack into any free parallel port, slap in a tape, and run a simple menu-driven backup program.

The Backpack won't break any speed records—it can back up 2MB a minute, about average for tape drives. And if you look only at the price tag, it's not a steal. The 40MB and 80MB drives cost \$569 and \$669, respectively. Comparable internal tape drives run about \$150 less, but you can use them only with one PC.

Both drives use QIC standard DC2000 tapes, and the 80MB unit can read tapes formatted in the 40MB drive.

data. To determine whether a project will be completed on time or within budget, ThinX enables you to create formulas. Then it's easy to experiment with alternatives and see the resulting costs calculated immediately. The formula capability is comprehensive, and ThinX includes plenty of built-in spreadsheetlike functions. Formulas can apply to all objects or to specific ones.

Version 2.0 adds a convenient spreadsheet-style data editor, file linking, enhanced formula capability, DDE support, and plenty of file import options including DBF, WK1, XLS, DRW, and CGM files.

At \$495 (\$49 for upgrades), ThinX holds a unique position among Windows applications, but it's not right for everyone. Despite the generally well-designed interface, it takes a considerable amount of time to get up to speed, and designing

a new application can be very tedious.

ThinX's analytical and reports capabilities fall short of spreadsheets and traditional data base programs. Nonetheless, for applications that aren't number intensive and are primarily visual in nature, ThinX is a great tool that helps you see the data.

—John Walkenbach

IN BRIEF

ThinX 2.0

WINDOWS This unique data manager provides a visual way to organize and present data.

Bell Atlantic Network Services, Inc.

13100 Columbia Pike
D37
Silver Spring, MD 20904
800/688-4469

Reader service no. 661

IN BRIEF

Backpack Tape Drive

Say good-bye to floppy backups! Plug this portable tape drive into a parallel port, and back up your PC for only \$569 (40MB) or \$669 (80MB).

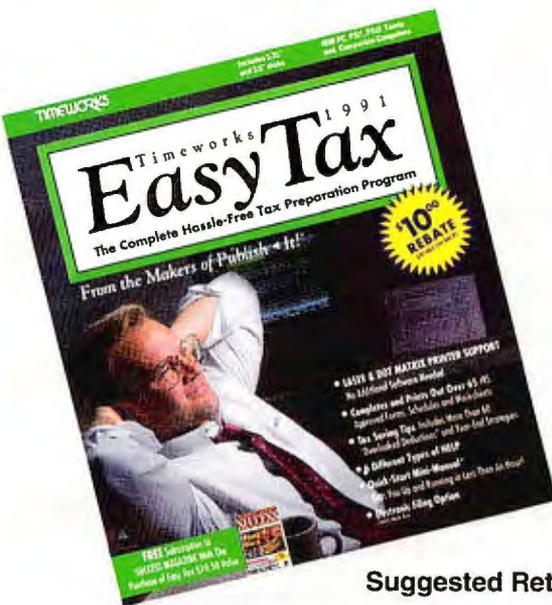
Micro Solutions Computer Products

132 W. Lincoln Hwy.
DeKalb, IL 60115
815/756-3411,
815/756-2928 (fax)

Reader service no. 643

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As the name implies, we're easy to use—and learn. We've also included tons of tried and true money-saving tips, written exclusively for *EasyTax*.

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Or call: 1 (800) 323-7744
(Ask for Operator 135)
Fax: 1 (708) 559-1360
 Visa MasterCard American Express
Acct# _____ Exp. Date _____

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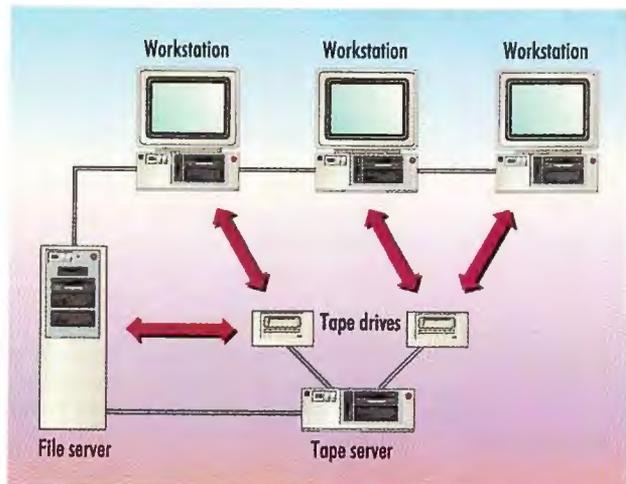
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City _____	State _____	Zip _____
Signature _____		

Maynard LANStream Client/Server Backup System

LAN-Based Work-Group Backup That Leaves You in Control

You know you're courting disaster when the whole office isn't backed up. But how do you get everybody on the program? If you're living on the LAN, Maynard's new LAN-

Stream Client/Server Backup System for Novell LANs gives you the flexibility and control of a personal tape drive while it wraps a systemwide security blanket around your LAN.



LAN administrators can execute central backups of LAN drives or workstations, or individuals can do their own backups.

With LANStream, your LAN administrator can back up LAN servers, select only crucial workstations, or do the entire work group. You can sit back while your administrator backs up your PC, or take charge and back up what and when you want. The LANStream system gives you the control of a personal tape drive. Select a file or full backup and send your request to the tape server just as you'd send a job to the printer. While the backup or restore is under way, you can continue working with LANStream running in the background.

The LANStream system combines LANStream 1.0 software and utilities, a tape drive, SCSI controller, a cable to join the drive to your dedicated tape server, five tapes, and a special LANStream

tech support account. The system works with mixed NetWare 286/NetWare 386 LANs and even interconnected networks. The basic software license covers the tape server and five workstations. Prices for the startup system run from \$7495 to \$10,995, depending on the drive.

—*Rex Farrance*

IN BRIEF

LANStream Client/Server Backup System

The LANStream backup system for NetWare is a unique dedicated tape server design that gives you choices you never had with conventional LAN backups.

Maynard Electronics Inc.

36 Skyline Dr.
Lake Mary, FL 32746
800/821-8782,
407/263-3500 (fax)

Reader service no. 654

SL007 Notebook Computer

A Notebook James Bond Could Love

Ever agonized over what might happen if your notebook fell into the wrong hands? Here's a 386SL notebook with a unique approach to security: a socket for an optional \$995 coprocessor chip that encrypts every file written to disk (hard

and floppy) and all data transmitted via the ports. You can't turn the encryption off. Even if you lose the notebook—or someone steals it—no one can access your data without your password.

Based on the 20-MHz low-power version of Intel's 386 chip, the SL007 is designed for government, military, and business users who need a portable computer with dependable security. Unfortunately, the notebook's keyboard includes a non-standard cursor-key layout, emulated page keys, and only 10 function keys. The SL007 weighs 7.6 pounds and comes with a 60MB hard drive, 4MB of RAM expandable to 8MB, 32K memory cache, 10-inch backlit

VGA screen, and 4 hours of battery life with recharge time estimated at 40 minutes, according to the company.

The SL007 comes with a built-in 9600-baud fax/2400-

baud data modem, WinFax send/receive software, MS-DOS 5.0, Windows 3.0, and a pointing device, and it costs \$4995 without the encryption coprocessor. —*Jeff Bertolucci*

IN BRIEF

SL007 Notebook Computer

An optional coprocessor encrypts all data on the SL007's hard disk.

BCC

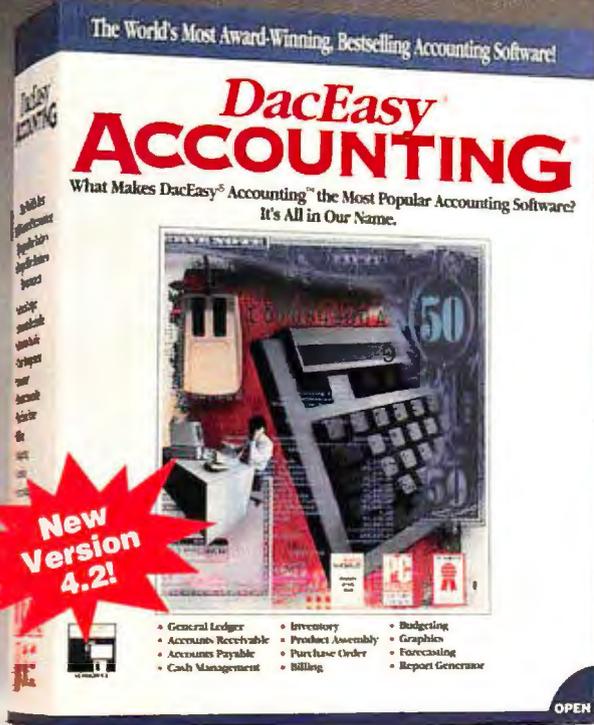
174 Component Dr.
San Jose, CA 95131
800/827-4222,
408/944-9000

Reader service no. 646



An optional coprocessor encrypts all your files inside the SL007 20-MHz 386SL notebook, which features 4MB of RAM, a 60MB hard drive, and a 10-inch backlit VGA screen.

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Minimum Hardware Requirements: 640K, IBM or compatibles. Hard disk. DOS 3.1 or later. Mouse optional. DacEasy, DacEasy Accounting, Payroll and BonusPack are trademarks of DacEasy, Inc. Copyright ©1991, DacEasy, Inc. All rights reserved.

Circle 94 on reader service card

TakeNote

Windows Filer With Data Management

ButtonWare's *TakeNote* is useful for organizing all sorts of things—from phone numbers to office equipment—but it's no easier to define than any personal information manager.

TakeNote is a cross between a personal information manager such as *PackRat* and the *Cardfile* accessory delivered with *Windows 3.0*. Like *Cardfile*, its primary use is to set up decks of phone numbers and addresses. Although *TakeNote* offers superior query, view, and report capabilities and helps you manage personal information better, it lacks the scheduling and accessories characteristic of a true PIM.

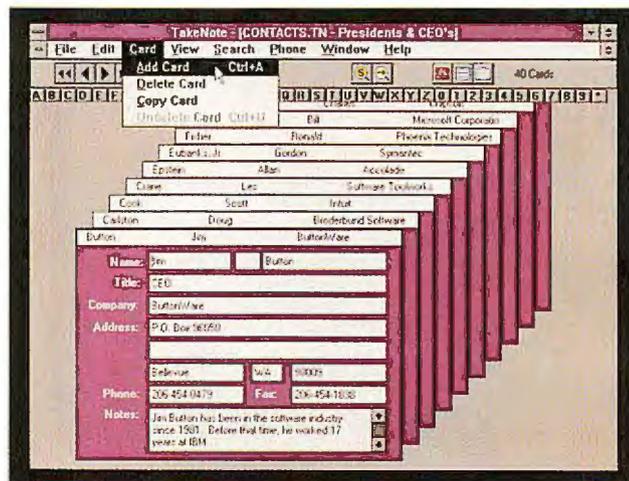
TakeNote is much more graphical than *Cardfile*, and to good effect. You have the usual scroll bars and drop-downs from a menu bar, and beneath that is a Button Bar with icons that allow quick access to the most commonly used commands—forward and backward string and page searches, adding or deleting cards, dialing the phone, and printing labels or cards.

In addition to the classic address book or Rolodex formats, *TakeNote* gives you templates that make it easy to set

up an office inventory or library of software, reports, or music collections. You can then query and report on them, and view them as a table. It also imports *dBASE*, *PC-File*, *WordPerfect*, and ASCII files.

Unfortunately, in the interest of simplicity, *TakeNote*'s data fields are rather rigid. There is room for only two addresses per person and a work, home, cellular, and fax number. You can keep additional addresses and numbers in a card's 8K notes section, but that information isn't available to search.

All in all, *TakeNote* makes



A cross between a personal information manager and the Windows Cardfile, *TakeNote* tracks everything from phone numbers to office inventory.

small demands on your hard disk, memory, and pocket-book. It comes on just one disk and costs only \$69.95. You

can't put your company's sales data base on it, but it's a quick way to handle phone lists and labels. —Mike Hogan

MakeUp for Windows 3.0/3.1, TextAppeal for Windows

Bringing Character to Characters

Let's say you want to create a logo or spice up a newsletter or presentation by adding your own text-based graphics. You could struggle through a complicated presentation-graphics program—assuming you even have one—or take the easy route and pick up Bitstream's *MakeUp for Windows 3.0/3.1* or Power Up's *TextAppeal for Windows*.

Both *MakeUp* and *TextAppeal* (sold separately or bundled with *Express Publisher for Windows*; see review elsewhere in this section) are designed to make special text effects a snap.

MakeUp is the more sophisticated of the two. You can skew, rotate, curve, duplicate, scale, shadow, and wrap text around nearly any shape you can imagine. You can create your own characters and customize your image with multiple fill patterns and more than 16 million colors.

Though *MakeUp* is not a

draw program, it includes a healthy complement of drawing tools as well as hundreds of clip-art files. *MakeUp* imports and exports all the major graphic formats, and it supports Object Linking and Embedding (OLE) in both *Windows 3.0* and *3.1*. Double-clicking on a *MakeUp* image in, say, a word processor document loads *MakeUp* and that image, open and ready for you to work on it.

MakeUp, which lists for \$149, supports leading type standards, including TrueType, and ships with five Bitstream fonts.

TextAppeal takes a similar approach and matches most of *MakeUp*'s text and drawing capabilities, but it doesn't support OLE and its color capabilities are not as extensive. If you need some design guidance, it provides 40 Custom Tools—templates with text and object information, color, and style attributes—that you

can apply to your text or modify as needed. As part of its \$129.95 price, *TextAppeal* throws in *Adobe Type Manager* plus 13 additional fonts.

—Steve Fox

IN BRIEF

TakeNote

WINDOWS With ready-made templates for managing all kinds of data, this personal filer is a big step ahead of the Windows Cardfile.

ButtonWare Inc.

P.O. Box 96058
Bellevue, WA
98009-9818
800/528-8866,
206/454-0479

Reader service no. 659

IN BRIEF

Bitstream MakeUp for Windows 3.0/3.1

WINDOWS A versatile type-manipulation package from an old hand in the fonts business.

Bitstream Inc.

215 First St.
Cambridge, MA 02142
800/522-3668,
617/497-6222

Reader service no. 652

TextAppeal for Windows

WINDOWS Special effects for text—plus Adobe Type Manager—for \$129.

Power Up Software Corp.

2929 Campus Dr.
San Mateo, CA 94403
800/851-2917,
415/345-5900

Reader service no. 653

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And that's just the beginning. Our engineers designed these networks so they're ready to run right out of the cartons. All you need to do is unpack, connect the color-coded cabling and turn it on. There's no need to install networking cards or software — it's all been taken care of for you.

Once your OmniLAN system is up and running, Northgate keeps it operating at peak performance with a comprehensive package of factory-direct service and support. Services include technical support 24 hours a day, seven days a week. Our skilled technicians are backed by Certified NetWare® Engineers, and the call is on us. You also receive free non-diagnostic on-site hardware service from NCR® for one year.

In addition, Northgate backs every system with a one year parts and labor warranty and overnight shipment of replacement parts at our expense. Customized service and support packages — including extended warranty coverage — are also available.

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Northgate offers a variety of OmniLAN packages, which gives us the flexibility of tailoring a solution to meet your applications. Here's how to select the OmniLAN system that's right for you.

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- ETHERNET Thin Net
- ETHERNET 10BASE-T
- Northgate Local Area Wireless Network

Finish With One Of Two Networking Software Environments:

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- Novell NetWare 286 2.2

All Options Include Four 386SX™-Based Workstations.

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LAN packages come with 4 workstations featuring:

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- VGA card
- Network interface card
- 14" color monitor
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The information above describes just a few of the hundreds of network solutions available from Northgate. If you don't see the one you need, one of our LAN experts will be happy to custom-design one to meet your most exacting demands.

Call for latest pricing and complete custom configuration information.

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Notice to the Hearing Impaired: Northgate has TDD capability. Dial 800-535-0602.



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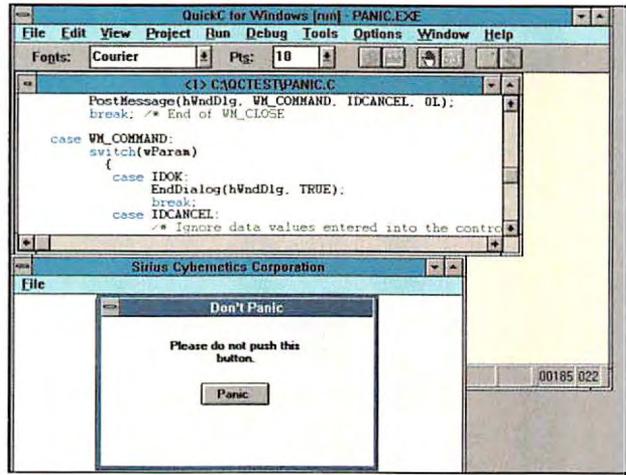
Microsoft QuickC for Windows

Graphical Programming in Windows for Windows Writers

Microsoft's long-awaited *QuickC for Windows* features integrated resource editing and debugging tools, along with graphical tools that make it easy to design a *Windows* interface without having to return to the DOS prompt. The \$199 application is Microsoft's first *Windows* development tool for C.

To build an application, you start with the program's image editor, which helps you create bit maps for icons and cursors, then turn to the dialog editor to build dialog boxes with buttons, check boxes, and other controls. Finally, enter the interface generator called QuickCASE:W, which takes the dialogs, icons, and bit maps and binds them into a complete user interface.

As it does this, QuickCASE:W generates a source code "skeleton" for your application in which the interface's



QuickC for Windows, Microsoft's first *Windows* development tool for C, features an editor that color-codes syntax to reduce errors.

buttons, scroll bars, and other doodads are active. Then you must search through the generated program to find the spots where your *Windows* code will make the interface controls do their jobs.

Writing *Windows* code is notoriously tricky but Micro-

soft makes it a bit easier with *QuickC's* editor, which color-codes keywords and comments so they stand out. This helps both novices and experts nab bugs, but to get a complete syntax check you must run the compiler. The compiler produces *Windows* EXE files,

Windows DLL, and DOS EXE files. However, the integrated debugger doesn't work with DOS EXE files.

Another plus: Virtually all the documentation is on line, so you'll rarely need to refer to the four printed manuals. Upgrades from *Microsoft C* or *QuickC 2.x* are \$89.95. With *QuickC for Windows* Microsoft finally offers a development product for *Windows* users. —Brett Glass

IN BRIEF

QuickC for Windows

WINDOWS QuickC for *Windows* makes it easier to develop *Windows* applications, but using it still requires an in-depth understanding of *Windows* programming.

Microsoft Corp.

1 Microsoft Way
Redmond, WA 98052
800/426-9400,
206/882-8080

Reader service no. 657

MicroPhone II for Windows 2.0

Dial M for Windows or Macintosh

The update of *MicroPhone II for Windows* successfully solves most of the problems in the first *Windows* version of the popular Macintosh communications program. Moreover, its price has been slashed to \$195, and it has many enhancements that will satisfy mainstream communications users.

Version 2.0 of *MicroPhone II for Windows* builds on the icon-based interface that popularized the first version, by adding a simple dialing directory. The directory lets you select several numbers, and the program dials each sequentially until it connects. Although dialing directories

have been an essential part of DOS communications programs for years, few *Windows* programs have them.

Another major and long-awaited enhancement is the addition of an excellent and fast communications protocol, ZMODEM. However, *MicroPhone II* still lacks the Kermit protocol.

Keeping up with the power of *Windows*, developer Software Ventures Corporation has added Dynamic Data Exchange capability to *MicroPhone II*. With DDE, you can completely automate data transfer between *MicroPhone II* and other *Windows* applications. You can also use DDE

with *MicroPhone II's* script language, letting you link applications. A graphical scripts editor that brings point-and-click script creation to *MicroPhone II* is also included. Scripts written for the *Windows* version are interchangeable

with those for the Macintosh version of *MicroPhone II*.

Another handy feature is the automatic macro recorder. It watches your steps and can play them back later. You can import these macros into the scripts editor for further refinement.

Users who complained about *MicroPhone II's* slow screen handling will also be impressed by version 2.0, which scrolls data acceptably.

If you're moving to *MicroPhone II for Windows* from full-featured DOS communications programs, you'll appreciate the icon-based interface and powerful but easy-to-use scripting tools. And the addition of DDE provides tight data links with your *Windows* applications.

—John V. Hedtke

IN BRIEF

MicroPhone II for Windows 2.0

WINDOWS A lower price, nifty dialing directory, and automatic scripting make version 2.0 a better communicator.

Software Ventures Corp.

2907 Claremont Ave.
Berkeley, CA 94705
510/644-3232

Reader service no. 667

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Express Publisher for Windows

Express Publisher Powers Up to Windows and Adds Features

Like its DOS counterpart, Power Up's new *Express Publisher for Windows* is designed for the business user who wants to create brochures, fliers, signs, and newsletters without having to learn complex, professional-quality desktop publishing packages such as *PageMaker* or *QuarkXpress*.

Priced at \$249.95, *Express Publisher for Windows* is packed with features not found in the DOS version. Take text handling: You can rotate text "live" in a document instead of

having to enter a separate text-rotation mode. The *Windows* version also includes an enhanced style editor that lets you retain the format of text imported from DOS and *Windows* programs such as *WordPerfect*, *Word for Windows*, and *1-2-3*.

The program includes thumbnail previews for viewing up to 32 pages at once, a new drag-and-drop feature that lets you move text and graphics from one page to another, 20 predesigned templates, and 100 clip-art images.

Express Publisher for Windows also comes with 13 PostScript outline fonts, a spelling checker, and a built-in version of Power Up's new *TextAppeal* program for creating text-based graphics (see review elsewhere in this section).

You can upgrade from the DOS-based *Express Publisher* for \$69.95. If you use another desktop publishing package, you can switch to *EP for Windows* for \$99.95. Although no match for *PageMaker*, *Express Publisher for Windows* is a decent entry-

level program for desktop publishers who need functionality without hassle.

—Jeff Bertolucci

IN BRIEF

Express Publisher for Windows

WINDOWS Improved text handling and multiple-page preview are included in this easy-to-use *Windows* desktop publishing program.

Power Up Software Corp.
2929 Campus Dr.
San Mateo, CA 94403
800/851-2917,
415/345-5900
Reader service no. 656

PKZip 2.0

More Zip for You

No matter how much you compress a file, it never seems small enough. To squeeze out just a bit more memory, PKware has brought out *PKZip 2.0*, with a patented compression algorithm that reduces files 5 to 10 percent more than its predecessor did.

No price or memory hog itself, version 2.0 sells for \$47 and includes expanded memory support so it requires as little as 85K of conventional memory, down from 95K in the previous version. If your computer doesn't have expanded memory, *PKZip 2.0* requires a hefty 183K of conventional memory because the new compression algorithm requires more RAM.

Another new feature: *PKZip 2.0* can create compressed files that span more than one disk. In the past, if you couldn't compress a large file onto a single floppy you got a 'Disk Full' message. Now when *PKZip* fills a floppy during the transfer process, it prompts you for a new disk.

Whoops, you don't have a formatted floppy? No problem, *PKZip* formats your disk on the fly and then completes the compression job.

Unfortunately, *PKZip 2.0* retains the same unfriendly, DOS command-line interface of the earlier versions. And don't expect to see a *Windows* version anytime soon.

PKZip 2.0 runs under any version of DOS from 2.0 to 5.0, and is compatible with DR DOS 6.0. If you own *PKZip 1.1*, the upgrade is free. If you own an earlier version, it costs \$8. —Jeff Bertolucci

IN BRIEF

PKZip 2.0

The latest version of this popular file compression utility offers improved compression, uses less conventional memory, and can create ZIP files that span disks.

PKware, Inc.
9025 N. Deerwood Dr.
Brown Deer, WI 53223
414/354-8699,
414/354-8559 (fax)
Reader service no. 655

14.4EX External Modem

Intel's Top of the Line: Faster Is Better

Fast, small, inexpensive, and feature packed, Intel's 14.4EX external modem gives you some of the best reasons yet to retire that old 2400-baud box.

Buying a modem usually requires crossing a thicket of bewildering acronyms that denote a confusing set of standards. Does the modem support the CCITT V.32 standard for speeds up to 9600 baud? V.32bis for speeds up to 14,400 baud? V.42 error control as well as V.42bis data compression? What about the MNP-1 through MNP-5 error correction data compression protocol?

If you don't need all that grief, consider the 14.4EX, which says yes to all the above, includes *Crosstalk Communicator* software, offers the longest warranty in the business (three years), and sells for \$699.

It gets better. The 14.4EX's internal 80188 processor is a master communications negotiator, not only falling back to match slower modems or com-

IN BRIEF

Intel 14.4EX External Modem

Current users of 2400-baud modems have nothing to lose and everything to gain by upgrading to this well-conceived, feature-packed modem.

Intel Corp.
C03-07
5200 N.E. Elam Young Pkwy.
Hillsboro, OR
97124-6497
800/538-3373,
503/690-7000 (fax)
Reader service no. 649

pensate for noisy lines, but also jumping forward quickly when it senses improved line conditions.

The result is an intelligent, all-purpose communicator that takes the hassle out of selecting the right modem. This is the modem that says it's time to trade up. You won't go wrong. —Alan Kaplan



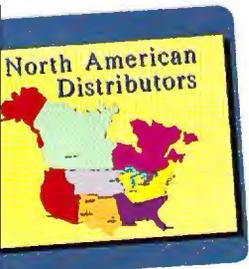
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Writer's Toolkit, American Heritage Dictionary, Webster's Dictionary, Word for Word/Professional 5.0

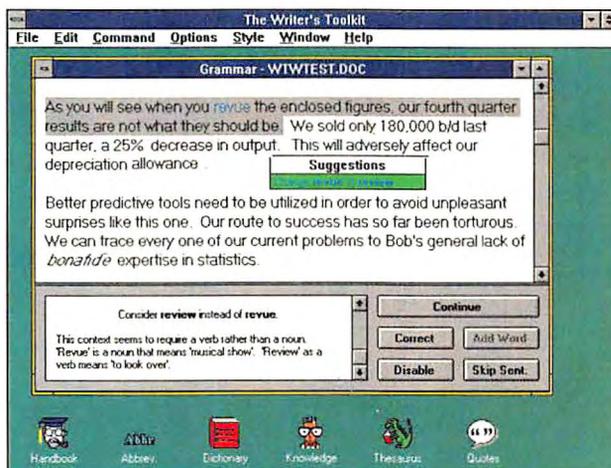
Four Word Processing Utilities That Help Sharpen Your Writing Skills

Now that you've got everything you need in a word processor, it's time to get serious about all that other stuff—like writing. Here are four new products designed to help you do that, and more.

The Writer's Toolkit

One of the hottest new arrivals is *The Writer's Toolkit*, a perfect companion to any Windows word processor, such as *WordPerfect for Windows*, *Ami Pro*, or *Word for Windows*. This package combines seven powerful reference tools in one elegant Windows package. Included are Houghton-Mifflin's *CorrecText Grammar, Style, Punctuation, and Speller Checker*; an *American Heritage Dictionary* with some 115,000 definitions; a *Roget's Thesaurus* to help you find synonyms for more than 42,000 words; a *Concise Columbia Dictionary of Quotations* containing 6000 quotes from sources ranging from Aristotle to Frank Zappa; Houghton-Mifflin's abbreviation program, which you can use to find the abbreviations and acronyms for states, computer terms, titles, and more; *Written Word III* to jog your memory about those long-forgotten rules from English 101; and a mini-encyclopedia called the *Dictionary of Common Knowledge*.

The Writer's Toolkit is one of those packages that was born for Windows. A drag-and-drop feature, for example, lets you drag a word from any toolkit window and drop it on a toolkit icon to find, for instance, a definition or synonym. It also lets you retrieve data from all open references simultaneously by entering the questionable word only once. At \$129, you can't do much better.



The Writer's Toolkit combines seven reference tools in one Windows package, including a 115,000-word dictionary and a mini-encyclopedia.

The American Heritage Electronic Dictionary

This 116,000-definition dictionary works with any word processor, spreadsheet, data base, or other text-based program and comes with a reverse search capability that lets you do strange and wonderful things you can't do with any book-form dictionary. For example, you can find words when you know only the definition, a related concept, or just a vague meaning. You can also perform searches using words like *and*, *or*, and *not*—for example, if you type *India and currency*, it will locate the word *rupee*. The product retails for \$99.

The Random House Webster's Electronic Dictionary & Thesaurus College Edition

This 180,000-word dictionary is really more like a small encyclopedia. It's about as up-to-date as you can get, with listings for such as current items as *sexual harassment*.

The product works with ten of the most popular DOS-based word processors. A hot key takes you from your word processor into the dictionary or an accompanying electronic

thesaurus. If you're just browsing, you can pick a general category such as *computer* and get a long list of terms including *assembly language* and *laptop*. If you're stuck, you can call on a three-layer help feature that has information on how the program works, a complete listing of terms that can be used in a search, and a pronunciation guide. The package sells for \$129.

Word for Word/Professional 5.0

Hate reformatting text from another word processor? This new version of the popular *Word for Word* file conversion utility is the answer. With this handy little package, you can convert files from more than 90 different text, spreadsheet, data base, and mail-merge formats into your favorite program, and still preserve the formatting of the original document. You can view the file before you convert it, and you don't have to tell the program what application the file came from.

The new, improved version features a handsome interface with pull-down menus, pop-up dialog boxes, and full mouse

support. To make the conversion, select the target format, tag the source files from the on-screen list, and choose *Begin*. And this baby is fast—you can convert three pages a second, and up to 1000 files at a time. The product sells for \$149; an upgrade costs \$40, and a LAN version is available.

—Bronwyn Fryer

IN BRIEF

Four word processing utilities provide reference material and file conversion for writers, managers, and students.

The Writer's Toolkit

WINDOWS Systems Compatibility Corp.
401 North Wabash #600
Chicago, IL 60611
312/329-0700,
312/670-0820 (fax)
Reader service no. 638

The American Heritage Electronic Dictionary

WordStar's Writing Tools Group, Inc.
One Harbor Dr. #111
Sausalito, CA 94965
800/523-3520
415/332-8780 (fax)
Reader service no. 639

The Random House Webster's Electronic Dictionary & Thesaurus College Edition

Reference Software Int'l
330 Townsend St.
San Francisco, CA 94107
800/872-9933,
415/541-0509
Reader service no. 640

Word for Word/Professional 5.0

Mastersoft, Inc.
6991 E. Camelback Rd.,
Ste. A-320
Scottsdale, AZ 85251
800/624-6107,
602/970-0706 (fax)
Reader service no. 641

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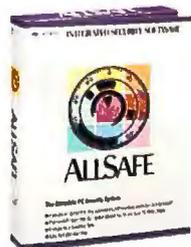
But the clock will run out on our \$60 savings offer.

Now you can protect your computer against both viruses and intruders 24-hours a day for just \$69, but only if you order by April 30, 1992.

More than one out of every ten PCs were crippled by viruses last year, according to *ISPNews* (June 1991). And the frustration and financial loss brought on by hackers is beyond calculation.

AllSafe™, from XTree Company, is the most powerful protection program available. First, AllSafe contains ViruSafe™, the most effective medicine for the prevention, detection and elimination of known or unknown viruses, whatever their alias or mutation.

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Circle 319 on reader service card

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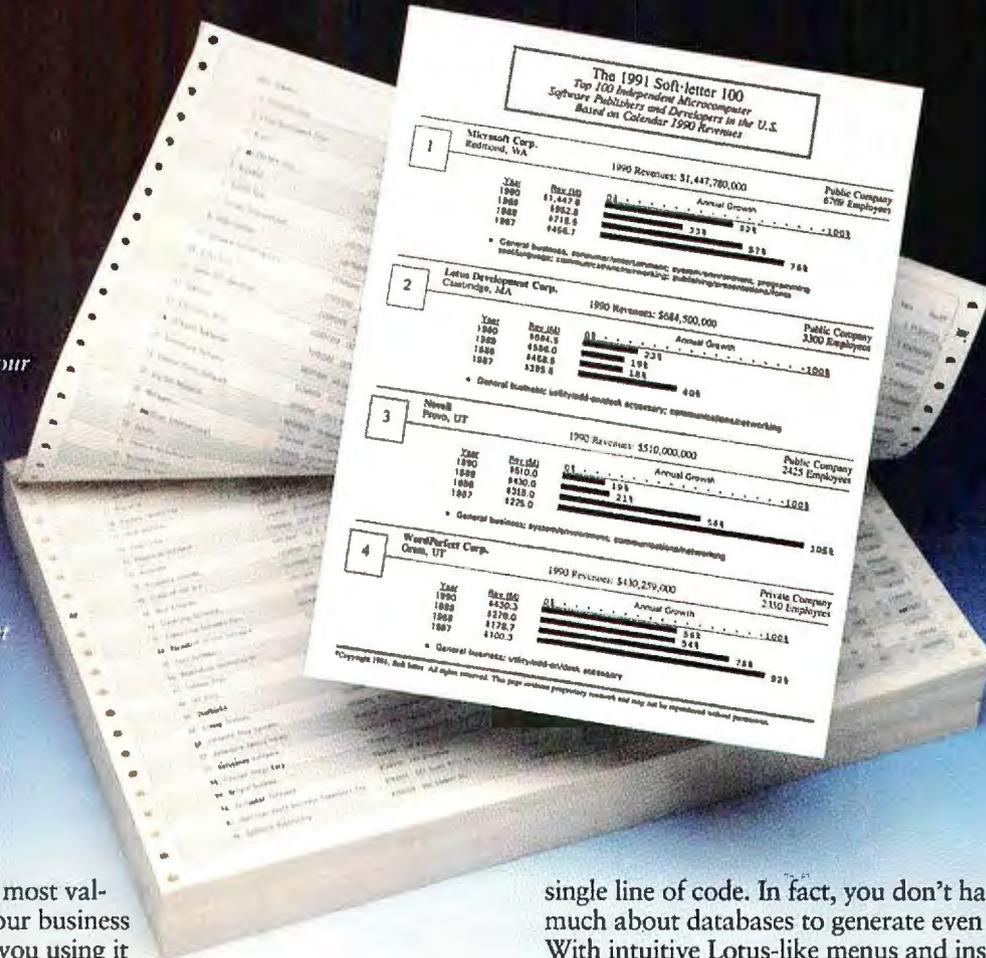
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Circle 181 on reader service card

Master 486SX-25, Legacy 486SX-25

Arche Masters Its Own Legacy



Featuring 4MB of RAM and a 128K memory cache, the Arche Master 486SX-25 is built around Intel's 25-MHz 486SX chip.

When you need power, every little tweak helps. So when Intel quietly introduced a 25-MHz version of its 486SX chip, Arche wasted no time. The company produced two of the first systems based on the chip, the Master 486SX-25 and the Legacy 486SX-25.

The two machines could be twins. The Legacy and Master 486SX-25 PCs have the same features and dimensions, and each is available in small or large chassis.

Here's the difference: The Master 486SX-25 (\$3449) comes bundled with a two-year on-site warranty, *Windows 3.0*, and a mouse; the Legacy (\$2698) does not.

Both feature a 25-MHz In-

tel 486SX chip; 4MB of RAM (upgradable to 32MB); a 128K memory cache; a socket for a Weitek 4167 math coprocessor; an IDE disk connector; a 5¼-inch 1.2MB floppy disk drive; and an AT-compatible system bus that runs at a user-selectable 8 or 11 MHz.

Both systems are available in a small chassis (16 by 17 by 6¼ inches) or a large one (roughly 4 inches taller). The smaller models come with three 5¼-inch half-height drive bays; the larger models have two additional half-height bays. Other features include a 101-key keyboard, one parallel and two serial ports, six 8/16-bit and two 8-bit expansion slots, a 200-watt power supply, and MS-DOS 5.0.

Arche sells its monitors separately. Its monochrome VGA monitor goes for \$295. Its color super-VGA monitor with a 1024 by 768 maximum resolution costs \$565. If you're looking for maximum power, these machines are worth taking out for a drive. If service is a big concern, the Master's two-year warranty should keep you comfortable, but if you can fix it yourself then the Legacy is a good deal.

—Jeff Bertolucci

IN BRIEF

Master 486SX-25, Legacy 486SX-25

Two 486SX PCs that use Intel's 25-MHz chip and come with 4MB of RAM and a 128K memory cache.

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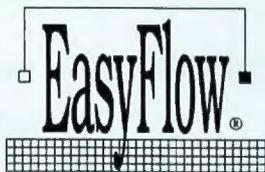
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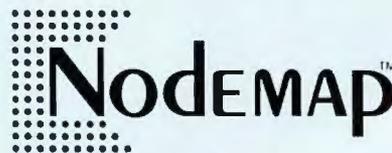
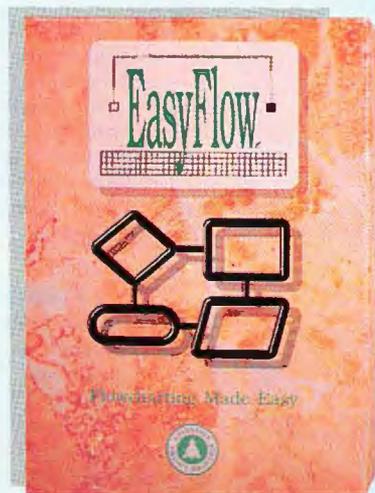
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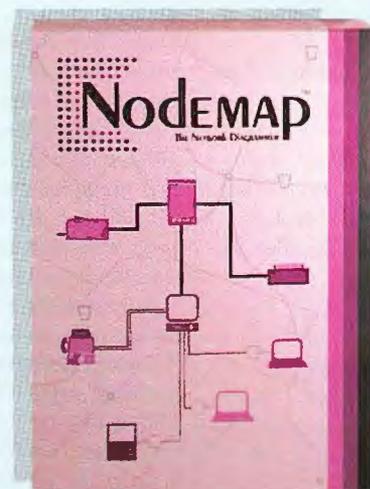
The program's powerful features include automatic line routing and automatic text centering inside shapes. The multi-level charting ability, 270 output device options and unparalleled support for desktop publishing and graphics packages have helped position EasyFlow as the DeskTop Flowcharting tool of choice with corporate managers.



...is specifically designed to help prepare LAN and WAN diagrams, telecommunica-

tion diagrams, and similar diagrams showing the interconnection involving computers and communication devices. Nodemap comes with the standard telecommunication and network planning symbols. Why spend valuable time tracing templates when you can select from a predefined library of shapes?

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HavenTree's products are network ready with metering software and run on IBM PCs and compatibles (provided they have 512 K memory and a graphics video adapter).



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Epson ActionLaser II

Laser Printing for Under \$1000

Throw away that loud dot matrix! Name-brand laser printer prices are plummeting. For \$999 retail, and considerably less on the street, you can get solid laser output with the ActionLaser II from Epson.

The ActionLaser's upgrade potential makes it a good investment for first-time laser buyers. It comes with 512K of memory—not enough for graphics, but you can upgrade to a maximum 5.5MB using standard SIMMs. Although Courier is its only resident font, the ActionLaser's cartridge slot lets you add HP-compatible font cartridges, and you can always download soft fonts. For even better font handling, the ActionLaser accommodates an IC card slot for Adobe PostScript. Resolution is a standard 300 dpi.

Other features include a 100-sheet paper tray and automatic interface switching.

If you're a home-office or small-business user looking for a printer that can grow with your needs, Epson's ActionLaser II offers adequate features at a good price.

—Susan Lusty

IN BRIEF

ActionLaser II

Epson's ActionLaser II provides laser output at a dot matrix price.

Epson America, Inc.
20770 Madrona Ave.
Torrance, CA
90509-2842
310/782-0770,
310/782-5220 (fax)
Reader service no. 647

Diconix 180si

Print on the Run

Don't get caught with that ground-breaking report trapped in your notebook—take your printer along too. Portable printers are coming down in size, weight, and price. One notable new entry is Kodak's Diconix 180si, a less expensive and more functional portable than the earlier Diconix 150 Plus.

Its price, weight, and speed best most other portables. For \$399, the 180si prints almost two pages per minute, twice as fast as most portables. It's one of the lightest luggables around, weighing less than 3 pounds (without battery, 3.5 with one). The unit hooks to a serial or parallel port, but the former option costs \$20.

If you're looking for wide output variety, the 180si has

four resident fonts: Helvetica, Prestige 10 and 12, and Gothic. Kodak includes IBM Proprinter and Epson FX-85 emulations, along with a Windows driver. However, at 192 dpi, your text will not be as crisp as that of most competing portable printers, such as Canon's BubbleJet.

Otherwise, the 180si is perfect for those on the go who need quick printing.

—Susan Lusty

IN BRIEF

Diconix 180si

Kodak's Diconix 180si won't weigh you down physically or financially.

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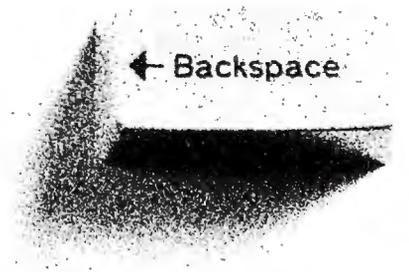
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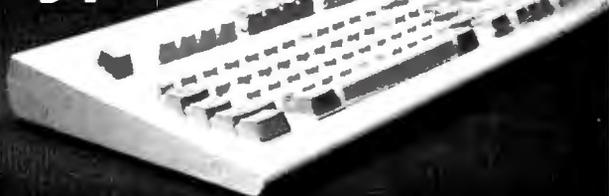
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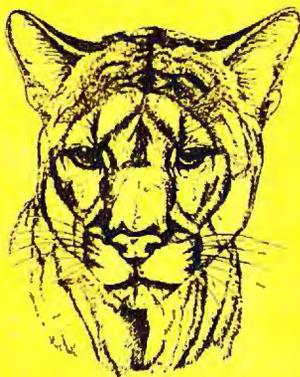
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Look at the comparison below. We took the information from the summer issue of Peachtree Times. Peachtree informs its customers of add-ons available for their software from third-party developers. Most of their add-ons are standard features in ACT-Plus. We added up the cost of the add-ons that are free in ACT-Plus. As you can see, you would have to pay over \$6900 to make Peachtree do what ACT-Plus does!

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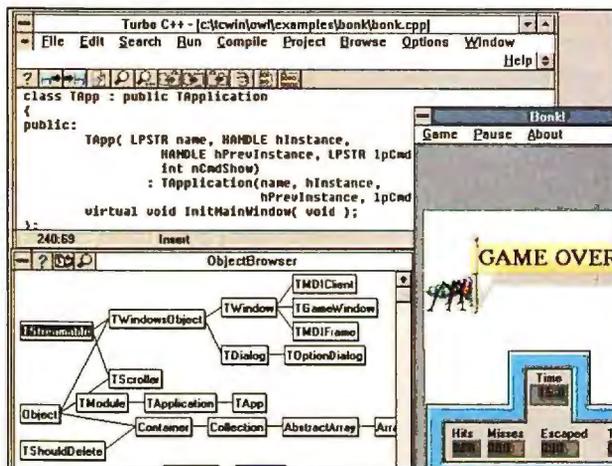
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Turbo C++ for Windows

Borland Gives Windows an Object



Turbo C++ for Windows can compile, link, run, and debug programs within Windows, and it includes Borland's acclaimed Object Windows Library (OWL). However, it lacks an application generator.

Borland's Turbo C++ for Windows is the first version of Turbo C++ that can compile, link, run, and debug programs completely within the Windows environment.

Turbo C++ for Windows, priced at \$144.95, is positioned head-to-head with Microsoft's QuickC for Windows, and the products have many similar features. However, the main difference—and Turbo C++ for Windows' big edge—is object-oriented programming.

Turbo C++ for Windows is a full implementation of C++ 2.1 (with a few C++ 3.0 features, such as templates) and includes Borland's much-acclaimed Object Windows Library (OWL) application framework. OWL is a library of C++ classes that represent parts of the Windows user interface, such as windows, dialog boxes, buttons, and list boxes. The advantage of OWL is that it frees programmers from the details of coding since much of the code is encapsulated out of sight within the class library.

However, Turbo C++ for Windows does not come with

an application generator—like the one in QuickC for Windows, QuickCASE:W—that can piece user interface objects together into a skeleton application. This makes the learning curve steeper; you first have to learn to use OWL, or write with the non-object-oriented Windows cells, before you can create your first Turbo C++ for Windows program.

Turbo C++ for Windows also can't create DOS EXE files, but it comes with Turbo Debugger for Windows—the same full-featured Windows debugger program that comes with Turbo C++.

—Brett Glass

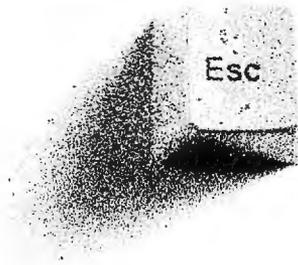
IN BRIEF

Turbo C++ for Windows
Borland brings object-oriented programming to Windows.

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Insight 486SX-20 Cache



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PC Tools 7.1

This upgrade promises to fix a variety of hardware/software bugs in *PC Tools 7.0*, including incompatibilities with Microsoft's DOS 5.0 and a collection of video cards. *PC Tools 7.1* includes an upgraded version of *PKLite*, the file compression utility from PKware, that is now fully compatible with DOS 5.0. Central Point Software has also patched up other

DOS 5.0-related glitches that resulted in memory conflicts and data loss. *PC Tools 7.1* is free to all registered owners of *PC Tools 7.0*. Installation instructions are included with version 7.1 disks, but the documentation remains unchanged. Central Point Software, 15220 N.W. Greenbrier Pkwy. #200, Beaverton, OR 97006; 503/690-8090, 503/690-8088 (fax).

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Distinct Back-Up for Windows 2.4

Distinct Back-Up for Windows lets you perform hard disk backups while running other *Windows* programs. Version 2.4 features a collection of new features, including a "push-button" menu, improved data compression, and password protection for *Windows*. Also new is a separate, DOS-based restore program that allows you to restore a *Windows* backup without having to load *Windows*—particularly handy after a total hard disk failure. Version 2.4 will back up and restore empty directories, and automatically create destination directories on a network drive for your backup files. *Distinct Back-Up for Windows 2.4* is \$129; and \$29 for upgrades. Distinct Corp., P.O. Box 3410, Saratoga, CA 95070; 408/741-0781, 408/741-0795 (fax).

Reader service no. 664

BetterYet III

Do you want some of the features of the HP LaserJet III without having to dump your LaserJet II? Output Technology Corporation thinks it has the answer with BetterYet III, a font cartridge that gives LaserJet II printers many of the LaserJet III's fonts and scaling features. BetterYet III comes with the same Agfa Intellifont scaling technology found in the LaserJet III, and provides 100 percent font compatibility with the LaserJet III, Output Technology says. The \$299 cartridge has the same seven bit-mapped fonts, one stick font, and eight outline fonts found in the LaserJet

III's U.S. and international character sets. However, BetterYet III does not include the LaserJet III's Resolution Enhancement technology. Your LaserJet II printer needs at least 1.5MB of RAM to run BetterYet III. Output Technology Corp., 2310 N. Fancher Rd., Spokane, WA 99212-1381; 800/468-8788, 509/536-0468.

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Crosstalk XVI 3.8

Crosstalk XVI 3.8 now makes it easier for you to transfer files to and from the CompuServe on-line information service, as well as bulletin board system (BBS) software. This version supports an additional seven file transfer protocols, including CompuServe B+, XMODEM CRC, XMODEM-1K, XMODEM-G, YMODEM/Batch, YMODEM-G, and ZMODEM. You now can transfer files remotely through error-correcting modems, and send individual or multiple files in a single transmission. Other features include 19 new and expanded script commands that allow you to type two letters to perform specific tasks, such as setting up long distance prefix numbers. *Crosstalk XVI 3.8* costs \$195; upgrades are \$49, and free for users who purchased the program after July 31. Digital Communications Associates, 1000 Alderman Dr., Alpharetta, GA 30202; 800/348-3221, 404/442-4000.

Reader service no. 666

For more information about any product, contact the manufacturer or circle the number on the reader service card. ●

Simple, Intuitive Contact, Time, Client and Communication Tracking.

REVIEWER'S NOTEBOOK: *A must for businesspeople who need to track dozens of commitments, outside contacts and opportunities. Provides fast, easy sales and marketing information management. As information changes and grows, the SuperOffice database is updated, allowing instant access to all kinds of useful combinations, perfect for the rigors of this environment. Excellent reporting, a great set of tools for easy customer/client management, comprehensive customer tracking, direct mail de-mystification, telemarketing tracking, lead management (how many of those do you burn?), sales forecasting and much more. In-depth contact management and follow-up tools. Completely menu driven, simple to understand and use to its potential, SuperOffice is a magnificent productivity tool. Conventional databases simply cannot produce easy, on-demand customer information management with the speed and completeness of SuperOffice.*

"The Information Law" states that knowledge must be accessible to everyone — including the managers and executives that are responsible for the company's success. If not, then "Murphy's Law" automatically kicks in and you could be headed for trouble. Managers and executives require a unique set of figures, indicators and reports. They need raw power behind their information and contact management efforts. While computers are used for a variety of "back-office" tasks; word processing, accounting, orders, billing and payroll, they sometimes hold information about customers, markets and trends hostage. SuperOffice is the first product we've seen that combines dozens of important features used often in fast-paced environments, with an easy-to-use operation — that won't change the way you work. You get timely information about your customers and clients, sales activity and tracking, direct mail, lead and inquiry management, sales forecasts, employee activity reporting/tracking and more.

SuperOffice allows employees at any level of expertise to become productive instantly. Work loads are more easily handled and time isn't wasted, vital information doesn't sit untouched or lost and efficiency is boosted with little effort. This remarkable product puts four powerful, easy-to-use office management tools — client contact directory; daily schedule planner; follow-up tracking and correspondence templates — together with a shared database! So vital, up-to-the-second data is at everyone's fingertips. It's the most advanced concept in company-wide data access and it works like a charm.

All of the individual tools are fully integrated for streamlined operation, and can be used as a single- or multi-user database system.

Diary.

Included in the Diary is the Agenda, an advanced time planner that allows complete control over daily schedules in a familiar format. References include customer names and notes detailing the activity. Privacy encourages use of program for all scheduling, eliminating the need to maintain multiple calendars and ensuring that action items are not overlooked.

Planned activities in the To-Do List remain visible until scheduled in the Agenda or completed. Activities that are not yet scheduled for a specific time and date are entered in the To-Do list from either the Diary or the Follow-Up module. Activities not completed on a scheduled day "fall-off" the Agenda and reappear in the To-Do list for rescheduling.

Follow-Up.

Follow-up provides a comprehensive overview of past and planned activities by account and provides key information about the types of services you are providing your customers and clients. When a cus-

tomers calls, anyone within the organization can scan all past and planned activities and be of immediate service. This improved response time means greater customer/client satisfaction.

Follow-up allows you to view all company-wide activity related to a specific customer or all customers, including meetings, telephone calls, product demonstrations and correspondence. Follow-up is directly linked to the Diary to capture all planned and completed activities.

Customers.

The Customers' file stores all data about your customers, clients and prospects, including address, phone, fax, and key contacts. An unlimited number of customers and contacts can be entered, with room for notes about each person. Because SuperOffice utilizes a shared database, all users can edit any record. This eliminates data synchronization problems and allows everyone to have the same up-to-date information about each customer.

Included in Customers is a scrollable "Interests" table (user-defined and allowing an unlimited number of entries) that provides a number of variables for sort and search functions. Also included is automatic dialing using a modem for efficient telemarketing.

Customers also allows you to record anticipated and actual dollar sales per account, with probability estimates for anticipated sales. This allows performance tracking vs. budgeted quota for assigned sales personnel, a quick overview of pending business activity, future sales forecasting and the ability to adapt sales and marketing strategies in a timely and productive manner.

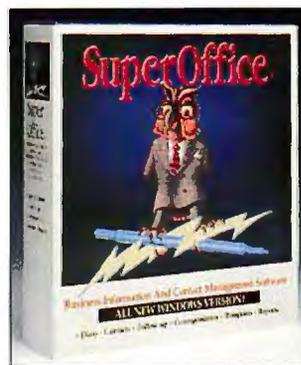
Letter, Fax and Spreadsheet Templates.

SuperOffice simplifies correspondence by providing a direct link between a selected customer record and various pre-designed letter and fax templates, which work with most popular word processing software. By searching for a specific account and choosing a template, the company's mailing address, contact person and date are automatically inserted in the document. The correct font, size and style are already in place, ensuring ease-of-use and error-free writing, while maintaining a consistent style, feel and message for all company correspondence.

Saved documents are archived by account, allowing a comprehensive overview of all correspondence by all users. Spreadsheet templates work with Microsoft Excel™ and Lotus 1-2-3™, allowing the creation of quotes, price lists, forecasts and travel expense forms.

Reports.

- Four report types allow a variety of options.
- **Customers, Businesses & Categories:** segments customers/clients and prospects by business type and category, allowing you to target specific categories for further investigation or action.
 - **Customer Lists & Mailing Labels:** for targeted mailings, this report allows you to search the customer database on a variety of criteria, including contact name, zip code, business type, category, interest, total sales, and number of employees. It automates mail-merge, defines follow-up activity to selected customers and automatically creates a follow-up note in each account record. Customer Lists is an excellent tool for direct marketing, telemarketing, and lead management and fulfillment, as well as evaluation of the effectiveness of a specific marketing campaign.
 - **Customer Follow-up:** lists all the customers with whom you have planned or completed activities. Reports can be generated by account, employee, group, all employees and/or follow-up type.



• **Sales Reports:** lists actual and projected sales by customer, employee, group, and/or all employees, with a probability of close and specified dollar amount. Sales Reports

allows managers to quickly view weekly sales reports indicating actual sales vs. budget, as well as expected future sales including the level of outstanding quotes and expected close dates.



Specifically designed to track the kinds of information needed by business people dealing with clients or the public.



Amazing client tracking and analysis providing a comprehensive overview of past and planned activities.



SuperOffice handles follow-up, correspondence, meetings and more.

SUPEROFFICE

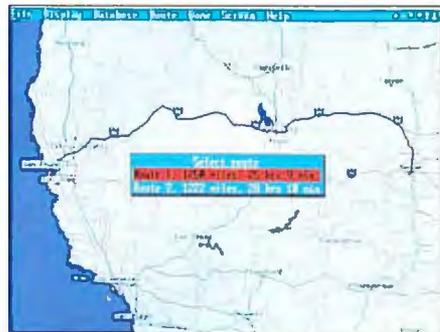
- BAQ3795A SuperOffice Single User \$295.00
 - BAQ3795B SuperOffice 5 User \$1295.00
 - BAQ3795C SuperOffice 10 User \$1795.00
- Requires 286 or higher; Windows 3.0; Minimum 2MB RAM; Monochrome, gray scale or VGA monitor; Any laser printer or dot matrix printer.

Call for further information on Macintosh Version.

The Intelligent Road Atlas For Your PC!

Planning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, prettiest or most convenient route — with hundreds of up-to-date, color maps right on your computer screen.

Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AUTOMAP where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive. It's fast, fun and informative.

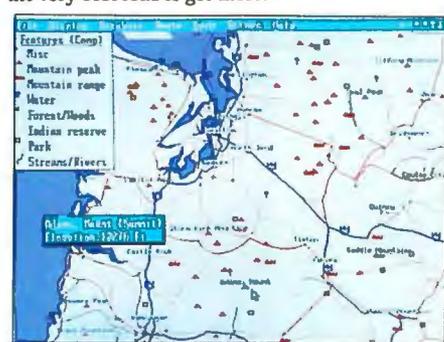


Select your starting point, end destination, and areas to visit and let AUTOMAP create a detailed map of your next trip!

AUTOMAP's powerful intelligence takes over from there. Instantly, it searches its massive database of over 300,000 miles of roads and highways for the best route to meet your requirements. It even gives you a list of alternative routes if you decide you'd like to wander a bit.

AUTOMAP also gives you a list of "places" from over 50,000 in its database. It's like having a travel guide pointing out the very best there is to see and

do. If you're a business traveller, you won't have to worry about being unfamiliar with new territories, just a quick session with AUTOMAP and you'll not only know exactly where you're going, you'll be on the very best road to get there.

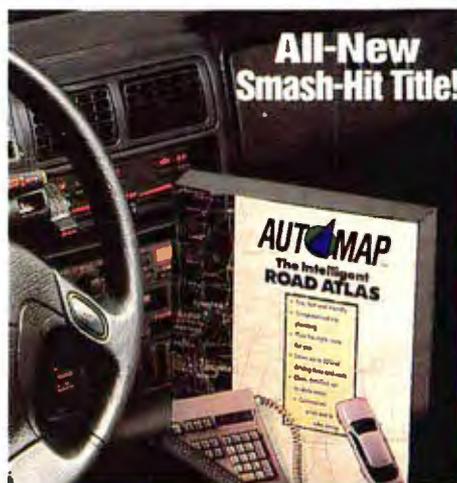


AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

AUTOMAP allows you to view your entire journey as a full color map and gives you all the details on mileage. Zoom out to see the entire region, or zoom in to see every detail.

AUTOMAP's driving instructions list all the roads you'll be traveling, exactly how far to go, exactly where to turn and even the signs to look for! These maps and directions can be viewed on your screen and printed out to refer to as you need them.

Pressed for time? Need a hotel? AUTOMAP provides you with travel times, mileage, and information on hotels and attractions. It also provides information on many cities and precise directions (including landmarks) for the most scenic drives in and out of each of them. What a great vacation planner!



Government Highway Data.

AUTOMAP uses data with the renowned accuracy of government sources. It has been designed to remain accurate with constant updates of new maps and details as they become available. AUTOMAP has proven itself with the most demanding businesspeople and vacationers. AUTOMAP will save time, money and frustration. In fact, surveys show that AUTOMAP can easily save up to 20% in driving time and related costs.

GET FREE U.S. ATLAS WITH THE PURCHASE OF AUTOMAP

AUTOMAP

BAQ4098A AUTOMAP 3 1/4"	\$79.95
BAQ4098B AUTOMAP 5 1/4"	\$79.95

Hercules, CGA, EGA, VGA, 512K RAM, hard disk, mouse recommended.

Cleaner and Simpler Windows...

Question: What's the easiest, most intuitive way to run a PC? (For the answer, read on...)

The jump from your PC's C: > to Windows was a major advance for ease-of-use. But there was still room for improvement. Norton Desktop took another step forward, but didn't go far enough. Finally, WinTools has arrived, delivering new "Drag and Drop" technology and the kind of power that is best summed up in two words: *Simply and Visually*.

WinTools is the first, complete, visual interface that lets you easily customize your computer screen

and automate your work, plus many more features.

Do All This with WinTools...

- WinTools remembers how you set up your desktop. So the next time you turn on your computer, you don't waste time recreating your environment.
- Manage files with "Drag and Drop" technology. Copy, move and delete files and subdirectories in the simplest way known — visually.
- Drag the icon of a file onto the icon of the word processor; your application is instantly launched and your file opens — all automatically.
- Choose from 100 included icons or create your own meaningful image.
- Set up one icon to run multiple applications with one click of the mouse. Automatically open all the files and applications you assign to a single icon.
- Control security on a network. Password protection can be set at any level, so users can have full access to their local hard drives, but not the server. Or, a company-wide interface can easily be built.
- Automatic backups are included, but you can also schedule and automate other functions as well.
- Introducing "BigSky," the virtual screen technology that lets you have 16 full screens, each customized for a specific type of work. Set up one as a "phone calls desk." Set up another as a "writing desk." Have one as an "interview desk," and still another as a "drawing desk." All set up just the way you like to work, each independent and uncluttered, and each in their own screen. Then instantly switch between them with a click of the mouse. How convenient! And of course, when you turn off your computer, everything is remembered.

Solve Windows Problems

Administrative Assistant: Organize your daily activities to correspond to your boss' schedule. Set up



Simply and Visually — that's the keynote for WinTools' powerful new Windows' interface.

one desktop for meetings, another for budgets and so on. Use BigSky to set up 16 full screen desktops and switch between them instantly.

Power User: Organize your desktop with icons that represent applications and data files. Your selected programs, files and communications can be run all at once simply by clicking. Schedule unattended runs, such as doing downloads late at night.

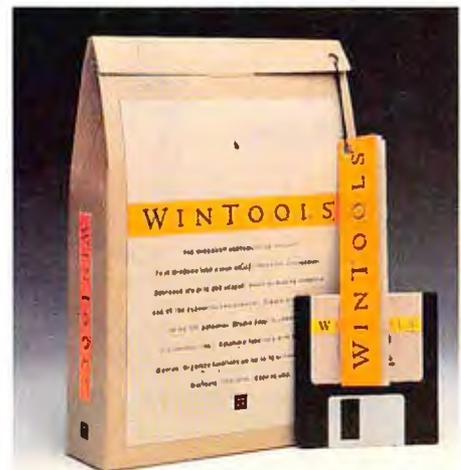
Network Administrator: Provide access to the network, but with control. Set up your network with passwords and create tools that give users as much freedom as desired while maintaining a secure environment. Passwords can be applied globally, at the desktop, or at individual levels.

As quoted in *PC Week*, "WinTools is really a breath of fresh air... Anyone who uses Windows a lot will appreciate WinTools."

WINTOOLS

BAQ4210 WinTools	\$149.00
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Requires Microsoft Windows 3.0



THE ALL-NEW CD GALLERY!

The Complete, Interactive CD-ROM Package!

Just Released!
**Includes CDR-36 or 72 Reader,
Stereo Speakers, Headphones And
7 Software Discs!**

This one box is your ticket to the incredible world of CD-ROM. Everything you need to get started is inside — including seven of the hottest CD-ROM software titles in the industry. Your Koss SA/30 amplified stereo speakers pump out the sound as you explore full-interactive, multimedia computing. This is a complete package, perfect for home, education and business.

Hundreds of thousands of diskettes' worth of information, fun and productivity are packed onto just 7 speedy CD-ROMs! They include the amazing, full-length encyclopedia, complete with enhanced sound. There's a comprehensive world atlas, presented in full-color, the incredible Battle Chess, a Time Table of History, The TIME Almanac on CD, Great Cities of The World and Mammals, from the pages of National Geographic. Without a doubt, it's the perfect introduction to CD-ROM, with everything included, nothing else to buy.

I personally found Great Cities of The World fascinating, it's packed with information on hotels in Paris, entertainment in New York, bull fights in Madrid and shopping in London. This multimedia guide covers tours by noted travel writer Jan Morris and information on culture, restaurants and shopping. Winner of the 1991 MPC Award, this disc includes a Travel Planner, Fast Fact section and quiz.

The New Grolier Electronic Encyclopedia covers hundreds of topics in great detail. Many entries contain enhanced sound and vibrant color. It is the premier CD-ROM encyclopedia. 33,000 articles, 1,500 full-color graphics, including numerous maps and stereo sound, make learning exciting.

Switch to National Geographic's Mammals and see animated sequences and full-color photos of everything from an aardvark to a zebra. A magnificent CD-ROM title that allows you to see and hear animals in their natural habitat. Contains both volumes of National Geographic's renowned work, with video clips bringing you closer than you thought possible to

a wide variety of the world's most intriguing animals.

Need some hard facts about the economy? Sports? Politics? Open the TIME Almanac and get the answers from one of the most respected sources — TIME Magazine. Nearly 5,000 articles covering the major events of the 20th century. A great reference tool for home or business. The interactive features make information easy to find.

Or, slip in the Time Table of History: Science and Innovations. More than 6,000 interrelated entries show the chronology of historical, scientific and technological events from the beginning of time to the present day. Over 1,000 multimedia graphics and stereo sound. It's a smash-hit, best-seller!

From there, explore the earth's geography with The Software Toolworks World Atlas. This remarkable package contains the most extensive collection of full-color maps you'll find anywhere. There's also plenty of data about each country and region: rainfall, population, industry, crime and more. You can take a trip around the world in just a few minutes — great for students and businesspeople! Over 240 fully-detailed, fully printable maps.

For a little fun, try Battle Chess — it's chess as you've only imagined it! An entire medieval world is at war, and your pieces are more than rooks and pawns... they are moving knights, foot soldiers, and regal kings and queens. Each has its own unique character, displayed in both animation and sound.

Amplified, Stereo Speakers!

With the free stereo headphones and a pair of Koss SA/30 amplified stereo speakers, you'll actually hear the sounds of the world when you slip in a CD — whether on CD Gallery software titles or conventional audio CDs. NEC's CD Gallery is comprehensive and complete, providing everything necessary to get you up and running in minutes.



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**Free Guinness Disc of Records
& Britannica's Family Choice™ CDs!**
Get a Total of 9 CDs!

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- Stereo headphones
- Interface kit
- Necessary cables and connections
- 3½" and 5¼" installation diskettes
- 4 Duracell® alkaline batteries
- Installation Guide & Software User Guides

System Requirements: IBM PC, XT/AT, PS/2, or 100% compatibles; minimum 640K available RAM; hard drive (minimum 5 MB available space); VGA graphics adaptor; DOS 3.3 or higher; at least one floppy disk drive (5¼" or 3½"); mouse recommended.

NEC CD GALLERY

BAQ8372 CD Gallery w/CDR-72 \$599.00
BAQ8336 CD Gallery w/CDR-36 \$599.00

**FREE Guinness Disc of Records & Family Choice™ CDs
with CDR-36 or CDR-72 Gallery Pack!**

Specify XT/AT, PS/2, or NEC Prospeed or parallel SCSI interface kit.

How The Readers Compare...

Complete CD-ROM Gallery	Response Time	List Price	Tiger Price
NEC CDR-72*	350 ms	\$1652	\$599
NEC CDR-36*	500 ms	\$1502	\$599

*Including Guinness Disc of Records & Britannica's Family Choice™ CDs.

A Railroad On Your Desktop!

It's the most fun I've had on my PC in years! Creating my own railroad line right on my screen — then create my own collection of customized cars! You design the track layout, using special tools that keep curves aligned and precise. You can design tracks of any configuration, including figure-8's and track switches.

And when the track is done, landscape the scene with buildings, trees, rivers, roads, bridges and more. Just select from the graphical menu bar as you design. There's also a complete set of drawing tools to create any type of layout, object or building. Design Your Own Railroad also includes an assort-

ment of sample track layouts to get you going. Then build the ultimate train set! Choose from dozens of classic cars, modify them, colorize them, add logos, designs and more. Then put your design to the test... delivering goods and collecting the revenues.

Design Your Own Railroad

BAQ3790 Railroad \$49.95
IBM PC, XT, AT, PS/2 or compatibles; DOS 2.0 or later; 512K RAM.



The Thoroughbred Of Remote Control Software.

Incredible speed! Remote control access via modem to other PCs, customer's PCs, telecommunicating and teleconferencing and more — with full Windows support — and blistering speed. In fact, Close-Up 4.0 is designed specifically to take advantage of the Windows environment — yet it runs beautifully with DOS as well. Even complex VGA color graphs and charts from Lotus 1-2-3 can be transmitted TEN TIMES FASTER than the closest competitor. Screens paint and repaint almost instantly. Close-Up 4.0 supports Windows in 386 Enhanced,

Standard and Real modes, with full keyboard and mouse support. When you link up remotely, the two screens and keyboards become one. Close-Up 4.0 is simple to use, it installs itself and operates with sleek pull-down menus. LAN version also available.

Close-Up 4.0

BAQ3798 Close-Up 4.0 \$169.00
IBM PC, XT, AT, PS/2 or compatibles; MS or PC DOS 2.0; modem.



Turn Your Black-And-White Hand Scanner Into An Explosive, True COLOR Scanner!

REVIEWER'S NOTEBOOK: I own a 256 grayscale hand scanner and often scan photos or illustrations for use in the TigerSoftware catalog. I don't own a color scanner (they are very nice, but very expensive), however a color scanner would sure come in handy sometimes. I could use color to create color slide shows, presentations, newsletters — and posters of the kids. That's why I was particularly intrigued with the CAT Color Converter. It actually converts my B&W hand scanner into a true color scanner! Just attach your 4" wide hand scanner to the CAT Color Converter and scan your color photo 3 times, using the built-in colored filters. When you've completed your scans, the CAT software combines the images into a fully balanced, true color image automatically. A legitimate alternative to a color scanner, with top-notch quality.



The CAT Color Converter works with all leading B&W scanners.

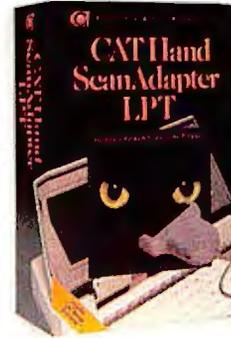
vice. You also get the CAT Color Converter image processing software, power adapter and complete documentation.

CAT Color Converter Supported Hand Scanners: The Complete Half-Page Scanner 200/400/GS; DFI Handy Scanners HS-2000/3000/3000 Plus; GeniScan GS-2000 Plus/4000/4500/B105G; Logitech ScanMan/ScanMan Plus/ScanMan 32/ScanMan 256; Marstek Mars 105/105 Plus/800; Mouse Systems PageBrush/32; Niscan/Niscan GS; Primax SE-400/SE-800.

Use Your Scanner With Your Laptop! Scan On The Road, At A Meeting Or At The Library!

A perfect match. Your portable or notebook PC and your hand scanner. The CAT Hand ScanAdapter LPT connects directly to your computer's parallel port and allows you to capture any information, photo or design—anywhere. The small, pocket-sized

device slips into your briefcase and comes complete with CAT Image Enhancer software which automatically converts hand-scanned, dithered images into 16 levels of gray. It also allows you to create files for use in professional graphics manipulation. It's simple, fast and very convenient. Works beautifully with all leading black & white hand scanners that we tested: The Complete Hand Scanner and half-page scanner, Logitech, Marstek, DFI Handy Scanner and Geniscan. Allows direct output to Epson dot-matrix, HP LaserJet and DeskJet, supports Hercules, CGA, EGA and VGA display, allows automatic image scaling and cropping and more.



CAT Hand ScanAdapter LPT Supported Scanners: The Complete Hand Scanner 200/400; The Complete Half-Page Scanner 200/400; DFI Handy Scanners HS-1000/2000/3000/3000 Plus; GeniScan GS-2000/2000 Plus/4000/4500; Logitech ScanMan/ScanMan Plus; Marstek Mars Scanners.

CAT	
BAQ3120 CAT Color Converter	\$159.95
BAQ3121 CAT Hand ScanAdapter LPT	\$139.95
<small>IBM PC XT, AT or compatible; VGA or SuperVGA graphics adapter; 640K RAM Memory with hard drive; PC-DOS or MS-DOS 3.1 or higher; supported hand scanner.</small>	

The CAT Color Converter allows you to capture thousands of colors and if you have a grayscale hand scanner, you'll get up to 16 million vibrant colors. If you've got a VGA display adapter, the optimal 256 colors will be automatically selected for scans with lifelike color and rich detail. The powerful CAT Color Converter software (included free) allows you to easily adjust the color palettes, brightness and contrast. Using this powerful software, you can create exportable .PCX and .TIF files in RGB format for use in desktop publishing, draw and paint programs (I work extensively in PC Paintbrush, DeluxePaint and ColorRIX, CorelDRAW! and Designer) to combine text, graphics, special effects and more. Everything you need is in the package: The CAT Color Converter scanning guide (12" x 10" x 1"), with built-in color filters, light source and hand scanner mounting de-

Computer Aided Design And Drafting Made Simple And Fast... CAD Isn't Slow And Agonizing Anymore.

REVIEWER'S NOTEBOOK: CAD is classically associated with drudgery. Slow, repetitive tasks. Hundreds of calculations and days of work just to create an office layout, furniture arrangement, landscape design, chart or schedule. Forget all that. The advent of one particular program, TurboCAD, has made the process sleek and simple — while building all the power inside. This full-featured drawing package is ideal for designers, engineers, artists, architects, managers, drafters, contractors, students and facility planners. Includes over 250 professionally designed drawing symbols and runs 5 TIMES FASTER than previous versions. We found that TurboCAD has all the features of products in the \$2,000 to \$3,000 range, and goes beyond with streamlined features that you won't find in any of them. Redraws at lightning speed and allows large drawings, regardless of available RAM, thanks to its powerful caching capabilities.

Packed with drawing features, built for speed and easy enough for first-time CAD users.

TurboCAD is ready to go, giving you a massive on-screen drafting area. You'll feel right at home with the clean, organized layout and unobtrusive toolboxes. The on-screen tutorial is a must even if you're an experienced CAD user, guiding you through the simple steps to professional drawings. It's also a great display of TurboCAD's blistering speed and underlying power. Then you take a stab at it, working from the pull-down menus to draw lines, circles and any other imaginable geometric shape in seconds.

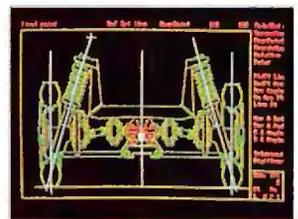
Once the object is drawn, it can be easily moved, mirrored, rotated or scaled. Use the grid and 18 snap modes to give you as much precision as you need.



Zoom and pan instantly around your drawing to focus on the details. You can draw using up to 128 layers, with 256 different line thicknesses, choose from a selection of line and arrow types, use your choice of several included text fonts and perform powerful automatic and associative dimensioning.

Quickly draw perfect rectangles, polygons, ellipses and grids. Use the convenient rubber-banding feature for instant sizing, choose from 3 different cursor types or switch to TurboCAD's orthogonal

mode (for added speed). You may also use the swift windowing to view different parts of your drawing. Copying drawings, or selected parts of them, is fast and easy. You can even use linear, array or radial options when copying for maximum image flexibility — without redrawing or retouching. Create your own symbol library for any project, designed to your specific needs. You can even have TurboCAD create a bill of materials for you — automatically!



TurboCAD's Power is Unmatched...

There's a scientific calculator on-board if you need it, and the powerful macro language boosts your drawing and design productivity. This product is great as a standalone system, but has the ability to seamlessly integrate with many other specialized design packages. TurboCAD comes complete with DXF, ASCII and HPGL interfaces and is compatible with virtually all micro, mainframe and desktop publishing systems.

One more interesting note on TurboCAD's power: it will actually generate the program code for any drawing in BASIC or TurboPascal.

TurboCAD	
BAQ3123 TurboCAD Release 2	\$95.00
<small>IBM compatible, 512K, hard drive, graphics card</small>	

Logitech Introduces Revolutionary, New Imaging Technology. Scans TWICE The Area Of A Flatbed Scanner!

Seamlessly Assembles Multiple Scans Into Large Single Images. Outperforms Flatbed Scanners.

When we first introduced the ScanMan 256 Grayscale hand scanner last year, it met with a roar of enthusiasm. We published the results of our testing — unbelievably sharp scans, with crisp, rich detail and 256 levels of gray. Scanning photos, illustrations — and text — was instantly taken to a new level. In head to head testing, we found the Logitech ScanMan 256 to be more versatile, faster and capable of producing large crystal-clear images. The 256 levels of gray add more depth and realism to all your scanned images.

Logitech had created the ultimate hand scanner, the hottest new product of the year.

But when you work with Logitech, you come to understand that they never sit still. While the ScanMan 256 was sweeping the industry (*PC Magazine's* "Editor's Choice," *InfoWorld's* 1991 "Product of the Year," *PC Computing's* "Most Valuable Product of 1991"), they were at work designing an enhancement that would catapult it to another level entirely — a completely new category of scanners. The innovation: Virtual Page Scanning. The Technology: the Logitech Auto-stitching feature. It



automatically "stitches" 2, 3, — even 4 scans together (so it can handle TWICE the area of an 8.5 by 11 flatbed scanner!). No other scanner we've ever seen can automatically merge scans into one completely seamless image. We scanned dozens of photos, large illustrations, 11" x 17" posters — each one was perfectly seamed. The ScanMan 256 smooths and de-skews the stitch, while evening the tones across the scans for remarkable images. Scan left to right, top to bottom — any way you like, the powerful ScanMan 256 software takes care of the rest.

The ScanMan 256 is constructed with the highest-quality materials. Of course it features the same "red-beam" technology that produces 7 times more light than conventional technologies, so more information is captured by the scanner, producing professional-quality scans in seconds.

Scan large photos or illustrations — up to 16 inches wide by 22 inches long — the largest scanning-area possible for any desktop scanner. It's fast and easy to use, with the superior engineering and design that goes into every Logitech device. The ScanMan 256 is the smart choice in scanning, replacing the bulky flatbeds, delivering unequalled depth, sharpness and clarity. There's really no reason to even consider any other scanner.

In addition to the ScanMan 256, you get a copy of the FotoTouch Image Editing System, which acts as the host application for the ScanMan 256. Scanned images are automatically transferred directly to FotoTouch for immediate editing, with your choice of great new tools and effects. You'll perform advanced, 256 gray scale editing and allows you to print your images with amazing results on any dot-matrix and laser printers as well as Linotronic typesetters and

other professional equipment.

As scanning text becomes more important in business, ScanMan 256 provides Perceive, one of the industry's highest-rated OCR software. The 256 grayscale support means text of any size, with any background color or pattern will be captured with precise accuracy. Perceive allows fast, easy capture of text at virtually any size — it's heavy duty OCR!

LOGITECH
BAQ2594 ScanMan 256/Perceive \$279.00
Call for requirements.

Amazing Scans!
Scan an area twice the size of even flatbed scanners!



Includes FREE FotoTouch image retouching software. Modify your digital photos with a wide array of special effects and specialized enhancement tools.

Instant Digital Snapshots! Introducing The Incredible New Logitech FotoMan...

REVIEWER'S NOTEBOOK: *What is it? In short, it's a portable, digital camera — for your computer. FotoMan takes great pictures with amazing clarity and 256 grayscale richness — then allows you to instantly download them to your PC. It includes a slew of image editing tools that open a world of creative opportunity, and is compatible with virtually all desktop publishing programs. The applications for this new technology are enormous. Insurance and real estate professionals are using it to expedite claims and transmit photographs of neighborhoods and homes. Manufacturers use FotoMan to quickly catalog products and parts, while law enforcement officials are using it to photograph suspects, crime scenes and evidence — without the time and expense of film, processing and prints. Digital images are instantly captured and merged into documents, or stored as a permanent record. Up to 32 images can be shot and stored on the FotoMan's RAM chip, then transferred via serial port to FotoTouch — or previewed on your screen.*

There are hundreds of practical uses for this new product, but we found FotoMan was a lot of fun. Fast and easy, it comes with an automatic flash, one-button operation and a field of focus from three feet to infinity. Includes FotoTouch for image editing, including 256 grayscale editing.



One of the hottest new ideas in computing: the digital photograph — taken by a small, portable and easy to use camera that allows instant transfer to your computer — without a digitizing board or any other hardware.

In the past, getting a photograph into your PC meant using a traditional film method. The film would first be processed into either slides or prints then scanned or stripped into your document. Now, just snap a photo of a new employee, for example, and send it directly to the corporate database. Once you've got your shot on-screen, the FotoTouch software allows you to easily make modifications. Then save your image in either TIFF, CCIT, BMP, PCX or EPS format. There's no film, no developing and no waiting!

Real Estate professionals can send pictures of homes to prospective buyers, editing out undesirable objects like garbage cans. Or images can be put together — like different shots of landscaping to create a custom layout. FotoMan and FotoTouch are like having a complete darkroom in your PC. The possibilities are endless.

Us FotoMan images for multimedia and presentations. Produce personalized stationery, letters, invitations and anything else where you want to add real-life images to your computer documents.

It portable! FotoMan packs all its power in a rugged unit that's small, lightweight and battery-operated, so you can take pictures anywhere.

Take pictures indoors and outdoors — Fotoman includes a built-in flash for indoor use and a neutral density filter for perfect use outdoors, too.

LOGITECH
BAQ2592 FotoMan \$799.00
Call for requirements.



Page Layout, Design And Typesetting - It's Fast, Easy And Fun With Publish-It! Version 2.0

REVIEWER'S NOTEBOOK: *New Publish-It! 2.0 requires inspiration only - no desktop publishing experience is necessary to create great looking printed pages the first time out. Sleek, swift layout tools help you create pro-quality advertisements, brochures, reports, school assignments and more in just minutes. Publish-It! 2.0 also contains over 85 "Design Ideas," professionally prepared document layouts that you simply fill-in your information and print! You can use these time-saving formats as is, or modify them in any way you like. Add graphics, charts and tables, insert graphic images, designs and illustrations - from the library of 180 graphics included in the package. You also get 30 ultra-high resolution clip-art illustrations, along with 8 fully scalable fonts in 17 styles - from 6 point, up to 72 point type. Add texture and shading, with 36 fill patterns, wrap text around any object or shape, auto-hyphenation, simple graphics importing. Control the look of text with a host of sleek typesetting features. There's full HP SoftFont support and downloadable PostScript support. Extraordinarily easy and fully WYSIWYG. Text changes, additions and revisions are done in seconds. For those of us who want incredible pages, but don't want to spend days learning a page layout program, Publish-It! 2.0 is the perfect solution. You'll get your first pages pumped out in about half an hour...*

Advanced drivers for impressive output on both dot-matrix and laser printers.

Today's desktop publishing programs have evolved into studio-quality products, full of sophisticated capabilities and specialized tools. Professionals have replaced the traditional graphics tools - T-squares, rulers, x-acto knives and outside typesetting - with these products. But learning DTP software has been tough. Publish-It! 2.0 contains all the desktop publishing tools, typesetting and graphics capabilities you need for clean, professional page layout - plus 85 ready-to-use document layouts for business, home and school use. Just add your text and print!

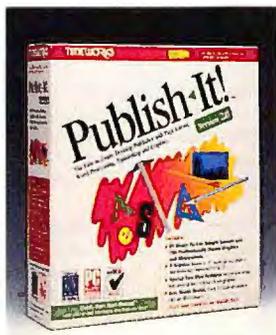
Graphics From Scratch.

If you want to start from scratch, Publish-It! Version 2.0 is the fastest, easiest product we've seen to get from blank page to finished documents. Thanks to the convenient GEM interface, everything is done from pull-down menus, icons, scroll bars and dialog boxes. And, of course, you get full WYSIWYG display as you work.

In page layout and design, flexibility is the key. Publish-It! enhances your creativity with unmatched flexibility and simplicity. Place text, graphics and illustrations anywhere on the page with a couple of mouse clicks or keystrokes. Reposition, overlap, resize text and columns easily. This flexibility allows you to easily experiment with your layout. Choose from six standard page sizes, print portrait or landscape with premium-quality output capabilities, and improve resolution on 120x144, 9-pin; 180x180, 24-pin, and 150x150 and 300x300 lasers.

Everything You Need Is Included.

Publish-It! Version 2.0 includes a variety of built-in fonts in a wide range of sizes and special effects. You get thousands of different combinations to choose from - and each type style can be reversed for dramatic impact. Sizes from 7 point to 72 point are available and



allow access to subscript and superscript characters as well as italics and underlined. Publish-It! 2.0 also supports the entire Bit-stream desktop publishing font collection.

Everything you need is here, including a word processor, so everything you write can take advantage of the Publish-It! 2.0 suite of desktop publishing features. Add headers and footers, search and replace, cut/copy/paste, tabs, line and paragraph indenting, decimal tabs, centering text alignment and justification. Import documents directly from WordPerfect, Microsoft Word, WordStar, and others - with all attributes intact.

The sample layouts are professionally designed - just add your text and headline and you've got an instant document. All layouts are completely customizable. If you'd prefer narrower columns, just select from the menu bar; Publish-It! 2.0 handles all of the hyphenation and rewrapping automatically.

Mixing text and graphics won't give you high marks for ease of use, and compatibility with draw and paint programs was exceptionally high, including PC Paintbrush, Lotus 1-2-3, CorelDRAW!... (TIFF and EPS) and many others. Once you've imported a graphic, you have full reign to crop it, modify it, size it any way you like. Of course, Publish-It! 2.0 includes a complete toolbox of built-in graphics tools to draw lines, boxes, circles, ellipses, polygons, and add your choice of dozens of fill patterns.

Special Typesetting Functions.

If you're serious about how your documents look, Publish-It! 2.0 gives you the ability to easily change the letter and word spacing (known as "kerning"), as well as the line and paragraph spacing (known as "leading"). You'll also love the Multiple-Size Screen View feature, allowing you to instantly view, edit and lay out pages at actual size, 200%, 75% and 50%.

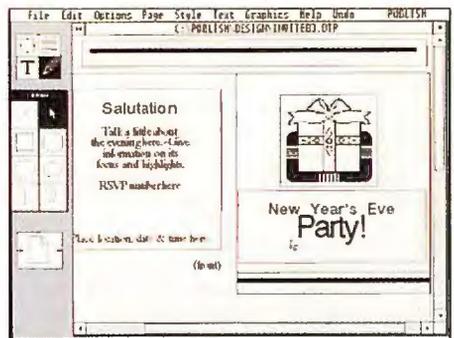
Special Time-Saver Features.

- **On-screen Rulers**, linked to your pointer, let you know exactly where you are on your page.
- **Selectable Page Guides** help you quickly place page elements on your page. Use the "Snap-To" feature to instantly create uniformly-sized columns and position them on your page.
- **The Precision Placement Feature** lets you easily place page elements to within 1/100th of an inch of your desired position.
- **Built-In Quick Keys** allow you to access frequently-used functions with one keystroke.
- **Automatic Page Numbering** inserts correctly positioned page numbers into your document - as you print.
- **Automatic Hyphenation** places hyphens into your text to fit your column width. Hyphens are automatically adjusted whenever you resize your column width or edit your text.
- **Left and Right Master Pages** help you quickly create magazine style documents.
- **Style Sheets** allow you to "recycle" your favorite page layouts and reuse them in other documents.
- **Paragraph Tagging** allows you to assign a "tag" or name to each paragraph style used throughout

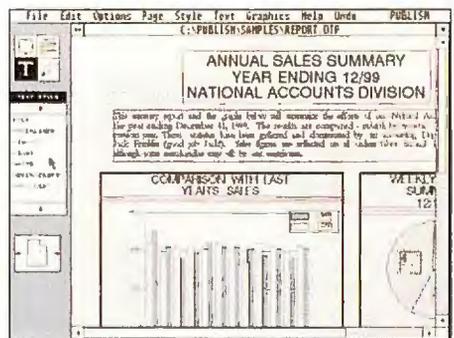
your document, for easy identification and modification.

- **UNDO Function:** Change your mind and you can change your document back to the way it was before your last input.
- **TIFF & SPLASH! Support:** Import uncompressed gray-scale TIFF files, and graphics created with Splash!
- **Import Popular Text Formats:** You can import text directly from WordPerfect 5.1, Microsoft Word and WordStar 5.
- **Encapsulated PostScript Graphics:** Import EPS images and rotate them in 90 degree increments.

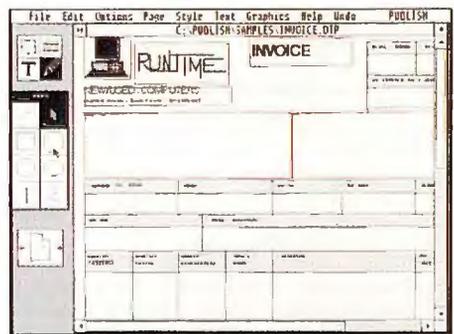
Looks Great On Screen...



Invitations, coupons, reports and resumes - they're all so easy with Publish-It! 2.0



Create company newsletters with imported graphics from Lotus 1-2-3!



In-house forms are so easy to design.

PUBLISH-IT! VERSION 2.0

BAQ3130 Publish-It! 2.0 Dual \$199.95
IBM PC, Tandy and compatibles, 512K; two floppy drives or a hard drive; DOS 3.0 or higher; mouse is recommended; 640K is required for use with Hercules, EGA or VGA displays. Runs with the Digital GEM software.

Prices Pulverized On Quality Hayes Modems! ...Now There's No Reason To Settle For Anything Less Than The Best!

REVIEWER'S NOTEBOOK: Hayes modems are legendary for their superior design, engineering, materials and of course, their reliable performance. The vision of Dennis Hayes back in the early 80's has established his company as the leader in PC communications hardware. But there are two misconceptions here. First, everyone thinks that since Hayes is state-of-the-art, that it's more expensive. Not true. Second, everyone also thinks that Hayes makes hardware only. Again, not true. Hayes brings you premium product performance at the same price you'll pay for an off-brand modem. They also produce award-winning communications software products that exploit the power of their modems like no other software really can. We're taking a look at the classic OPTIMA 96 and Pocket 2400 modems (the best in the business), along with Hayes Smartcom Exec and Smartcom III software.

OPTIMA 96.

An industry icon. The incredible Hayes Smartcom modem OPTIMA 96. Blistering 9600 bps, V.32 speed, perfect for connections to information services, bulletin boards, corporate host computers and more. Automatically finds and selects the highest speed and best combination of error-control and data compression each time you connect to another modem. You get the cleanest, most efficient connections with a Hayes. That's not a misconception.

The OPTIMA 96 also contains a very important feature known as "Data Compression", allowing it to exchange data at four times its 9600 speed, producing file transfers at the incredible speed of 38,400 bps over regular telephone lines. Hayes set the standard in modem communications — they know what they're doing. It protects your data with the most extensive set of error-control technologies ever introduced, giving you flexibility and peace of mind.



The OPTIMA 96 provides backward compatibility with earlier error control protocols such as MNP; supports speeds ranging from 300 bps to 9600 bps to talk with almost any modem ever sold. The advanced Hayes AutoSync technology eliminates the need for costly synchronous interface cards (beware of that hidden cost when purchasing an off-brand modem!). The OPTIMA uses your asynchronous port, and the AutoSync software, to create a synchronous connection with another PC or a mainframe. All this for the same price as other modems, making the Hayes Smartcom OPTIMA 96 an incredible value from TigerSoftware. You know that you really want the reliability and features of a Hayes.

And when you crack open the OPTIMA 96 box, you'll notice that there's a free gift inside: Smartcom EZ Communications Software. A smash-hit in stores for \$49, Smartcom EZ is a great starter set for the communications novice. Instantly allows access to the wonderful world of connectivity. The world of on-line information is growing at a staggering rate, opening up educational and financial opportunities. Simple steps put you in touch with on-line services, bulletin boards and other personal computers with a modem — with big savings on memberships.

More free goodies? How about special offers and

discounts on fax delivery services from a variety of major services, giving you the ability to send faxes from your computer without buying a separate fax/modem. You can also get a free data communications library — tips and techniques compiled from the industry's leading computer publications. You'll learn about calling on-line services, playing interactive games (a hot new trend), finding useful databases, downloading free software and much more. Put the top-rated modem on your desktop: the Hayes Smartcom OPTIMA 96.

The Hayes Pocket 2400 Modem.

Tiny little thing... just 2" by 3" (and less than an inch thick), the perfect modem for laptops. Smaller than a deck of cards, the Pocket 2400 contains all the design graces and solid engineering that goes into every Hayes modem. This itty-bitsy 2400/1200/300 bps communicator comes with everything you need to get underway immediately: includes FREE Smartcom EZ software, telephone/computer cables, carrying case and ironclad two year warranty. The Pocket 2400 needs no batteries — drawing its power requirements directly from the phone line.



A great on-the-road modem, allows you to access valuable information from on-line services for reports, papers and presentations. Get up-to-the-second information on travel planning to obtain the lowest air fares, hotel and rental car rates. Why buy just any modem when you can have a Hayes?

Smartcom Exec Communications Software.

Hayes wrote the book on PC communications technology, so it's only natural that they write the best software product to go with their fine line of modems. Smartcom Exec combines simple, straight forward operation with remarkable power and flexibility. Winner of *PC Magazine's* Editor's Choice, *Micro Decisions' Gold Award* and *Computer Reseller News' Buyer's Choice*, Smartcom Exec is the hottest value in communications software. Everything is here: the most popular terminal emulations and file transfer protocols, an on-line text editor, a handy phone book database (that automatically stores calling information), a powerful (yet simple to use) scripting language and more. All with sleek point-and-click operation.



Smartcom Exec makes complex communications scenarios easy. You'll quickly be writing your own programs to automate repetitive tasks like unattended operation and automatic log-ons. And when it comes to network support, *PC Week* says that "Smartcom Exec has the best LAN support of any software we tested." Perfect for users of any level.

Smartcom III Communications Software.



The ideal business communications software. Supports modem sharing on a LAN and offers a vast array of popular terminal emulations, CCITT X.32 (Dial-up X.25) multi-session support, error control file transfer protocols,

a full-featured text editor, powerful SCOPE scripting language, file scrambling and advanced compression technology and more. Perfect for LAN environments, Smartcom III supports the sharing of either a single modem or multiple modems on popular asynchronous communications servers from Novell, 3Com, Network Products and J&L. There's also support for network printers.

Smartcom III Program Interface.

Menus

- Easy-to-use menu interface organizes program operations and simplifies user control.
- "Short-cut" keys allows quick selection of desired options with a single keystroke.
- Typing ahead bypasses menus for increased speed.

Tables

- Tables are used to list items, such as file directories and Connection lists.
- Items may be selected from a table by typing or selecting its name.

Setting Screens

- Setting Screens provide options for adjusting the way Smartcom III works with the user's computer or the host system.
- Program Settings options include: General Settings, Printer Settings, Editor Settings, and Editor Key Assignments.
- Commonly used settings are included as defaults to reduce the need to configure more complex parameter settings.

Activity and Connection Settings

- Activity settings help manage the multi-session capabilities of Smartcom III and correspond to what is done once on-line operations begin; i.e., terminal emulation, file transfer protocol, etc.
- Connection Settings relate to the process of getting on-line; i.e., phone number, data rate, etc.
- Stores phone numbers and other information (COM Port, Connection Type, Transmission Speed, Character Format, Terminal Emulation, Start Connection, Protocol Settings, File Transfer Protocol, Flow-Control Protocol, and Autotype Protocol) to make call placement fast and simple.

HAYES

BAQ3127 Smartmodem OPTIMA 96	\$495.00
BAQ3128 Pocket 2400	\$175.00
BAQ3125 Smartcom Exec Communications Software	\$79.00
BAQ3126 Smartcom III Communications Software	\$129.00

Call for system requirements on individual modem/software configurations.

Full-Motion, Interactive Sherlock Holmes Mysteries!

"Sherlock Holmes, Consulting Detective" Over 90 Minutes Of Adventure On One CD!

REVIEWER'S NOTEBOOK: An absolute must for electronic game fans, Sherlock aficionados and deductive-reasoners! Sherlock Holmes, Consulting Detective is the only game we've ever seen that features FULL MOTION VIDEO. You actually interact with the on-screen characters, embarking on three different cases with the super-sleuth himself, Watson and an intriguing collection of victims, suspects, generals, beautiful women and jealous sisters. It's a fascinating new technology. The production-quality sound is compatible with most sound boards (including the ThunderBoard, available through Tiger, call for details). The cases are well written adaptations of classics licensed from the Sir Arthur Conan Doyle estate. Your interaction changes the course of the action, your interrogations lead to valuable information and the evidence you uncover leads to clues needed to help Scotland Yard nab the villainous murderer. Members of the Tiger staff first saw this disc at

3 EXCITING MYSTERIES!

the CD-ROM Expo in San Jose last summer. We knew then that this one was destined to become a classic. If you've got a CD-ROM reader, you'll love it. This one multimedia full-motion blockbuster is worth it!



FULL MOTION VIDEO!

For the first time ever, over 90 minutes of full-motion video brings Sherlock Holmes to life. This revolutionary CD gaming experience lets you match wits with the super-sleuth himself. Guide Sherlock and Watson through the streets of London to interrogate suspects and solve three intriguing murder mysteries!

The Case of the Mummy's Curse.

Four men found dead. Some say the murderer is a 4000 year old Mummy exhumed during an archeological dig in Katebet, Egypt. Were their murders simply coincidental or were these men cursed from the crypt?

The Case of the Mystified Murderess.

Two sisters. One beautiful and plain. A single man. Tall, handsome... and dead. Who did it? Was it jealousy or was it greed?

Could the murder be tied to a rash of burglaries causing panic in the upper-class communities of London?

The Case of the Tin Soldier.

Waterloo, 1815. Power and Passion. He was an officer but not a gentleman. Now, years later, the retired General has been murdered, a jewel stolen, and a king's ransom waits to be claimed. Who



killed General Armstead and why?

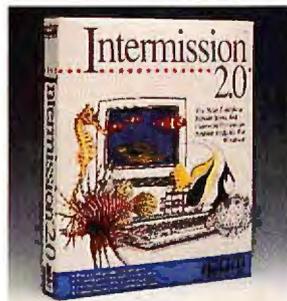
Also Available From TigerSoftware: INTERMISSION 2.0.

Screen saving taken to the limit! Packed with 56 animated screen-saving sequences along with password protection, network security and even a session for DOS screen blanking without Windows!

So while you're protecting your monitor from the damaging effects of phosphor screen burn-in, you'll have some pretty exciting entertainment. There are screens here that we've never seen before. We loved the Ant Farm, Dancing Pig and Battling Mixers! You can even combine any of the 56 individual effects together for great animated sessions, slide shows — style presentations or let Intermission display them at random for you.

Features:

NetPass System Administrator network-wide password. **Intermission for DOS**, support for DOS even without Windows. **SysMonitor** system CPU activity monitor.



ICOM

BAQ3132 **Sherlock Holmes, Consulting Detective CD-ROM** . . . \$59.95
BAQ3131 **Intermission** . . . \$39.95
Sherlock Holmes: requires CD-ROM reader. *Intermission*: requires Microsoft Windows 3.0 or later.

Extend WordPerfect's Screen Display.

REVIEWER'S NOTEBOOK: WordPerfect Users will love this utility. It actually displays text in compressed format on your screen so you can actually see well beyond the limitations of 25 rows and 80 columns. No more scrolling left and right while editing a proportionately spaced document. Up to 25 screen sizes to choose from, up to 128 characters per line (incredible!) — and screen sizes can be changed on demand. Displays font attributes such as bold, underline and actual font size. Simple to use, a great productivity enhancer. This is a product you've probably been waiting for, but didn't know existed.

Easy to install, you're up and running in under 5 minutes. ScreenExtender is fully integrated with WordPerfect and supports all the familiar editing commands you use now. **NETWORK EDITION AVAILABLE.**

By just using two definable hot-keys, you'll reach all the powerful functionality that ScreenExtender has to offer. It's that easy to use. Set rows to 25, 34, 43, 49 or 58 and columns can be set to 80, 90, 102, 120 or 128. That's some heavy real estate.

There are a few other goodies that ScreenExtender gives you, like the ability to choose from six display fonts: two Roman fonts, two Gothic fonts and two sans serif fonts. Find the ones that you like to work with the most. Want more? Okay, how about the ability to customize your color display by selecting 16 screen colors from a palette of 64. Up to 16 color sets can be created, named and saved for instant retrieval. And ScreenExtender supports all major graphics adapters: SuperVGA (800 x 600), Gas Plasma (640 x 400), VGA, EGA, CGA and Hercules.

Here are some of the comments the press has made about this incredible product.

"...(ScreenExtender 2.0) does exactly what its name implies."
— PC Sources

"ScreenExtender 2.0 provides high resolution display and unequalled clarity while editing in WordPerfect."
..."While ScreenExtender has always been extremely easy to install and use, the context-sensitive help facility provides detailed explanation of what options are available at any given time and allows the novice user to quickly learn the program without referring to the instruction manual."
— Computer Monthly

"ScreenExtender dramatically increases productivity by eliminating the need to scroll the screen left and right, while editing a proportional-spaced document."
— ABA Journal

"Overall, WordPerfect with ScreenExtender was the package of choice for the law office power user."
— Legal Assistant Today

"This remarkable add-in TSR program displays text in compressed format, thereby allowing your screen to be extended well beyond the normal twenty-five rows and eighty columns."
— Los Angeles Computer Society

"ScreenExtender works just as it is promoted!"
— Los Angeles Computer Society

"Life became much simpler when I discovered a program named ScreenExtender. It does some remarkable things to the way text appears on a WordPerfect screen."
— Bob Nadler, The Suburbanite

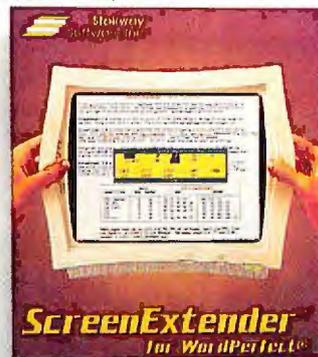
"...it cuts down tremendously on the time and frustration factor."
— The Washington Lawyer

"In two months of testing, I have found ScreenExtender's 'anti-scroll' feature to be a real convenience and productivity booster..." "ScreenExtender greatly improves the readability of laptop screens in three ways."
— The Perfect Lawyer

"...ScreenExtender Version 2.0 is much more than a convenience — it's a necessity."
— The Computer Corner, KELR Radio Station

System Requirements.

ScreenExtender for WordPerfect 5.0/5.1 works on all IBM PCs, XTs and compatibles equipped with SVGA, VGA, EGA, CGA, Gas Plasma or Hercules graphics adapters and DOS 2.0 or later. Special support is provided for MCGA, Hercules RamFont and Hercules In-Color video cards. Maximum memory required is about 50K, depending on graphics adapter and features used. Memory is required when WordPerfect is running.



SCREENEXTENDER

BAQ3124A **ScreenExtender 5 1/4" or 3 1/2"** . . . \$89.00
BAQ3124B **Network 3 PAK 5 1/4" or 3 1/2"** . . . \$129.00
BAQ3124C **Network 5 PAK Dual** . . . \$229.00
BAQ3124D **Network 10 PAK Dual** . . . \$329.00
BAQ3124E **Network 20 PAK Dual** . . . \$629.00
*All network packs contain 3 user manuals.

The Only Complete, Professional Imaging Utility. 24-Bit Color, Grayscale And Black & White Support — With Conversions!

REVIEWER'S NOTEBOOK: *Image processing has always been shrouded in mystery. You had to learn cryptic terms, calculate gamma and contrast levels and then somehow be able to navigate inconsistent file formats (Image files have serious standardization problems — it's the number one complaint about image processing software). HALO Desktop Imager is the only product we've ever seen that automatically converts any file format to any other for studio-quality images every time. Then you can use your scanned, captured or painted images in your word processor or desktop publisher with seamless integration. You get all the classic image enhancing and processing tools, plus a host of innovative features that are unavailable anywhere else. Includes support for TIFF, PCX, IMG, HALO CUT, GIF, TGA and BMP formats. There's also color, tone and contrast enhancement and correction, smooth and sharpen, posterization, etched metal, embossing, dozens more...*

Feast your eyes on true, 24-bit color WITHOUT A 24-BIT Display Card! HALO Desktop Imager's proprietary M/Color technology gives you explosive, 24-bit color or 8-bit grayscale images with an EGA, VGA or SuperVGA device. We love the ability to easily create high-quality, wall-size posters with any printer! Simple to use, the best results we achieved in our 9-product benchmark image testing...

A Great Feature — File Conversions.

Although HALO Desktop Imager provided us with plenty to talk about, one feature in particular made life surprisingly simple during our testing: the ability to convert images cleanly and quickly between formats. As we've discovered, not all packages are able to do that. In fact, very few actually convert with quality results the formats listed on their boxes. There's always some problem. Not with HALO Desktop Imager. Perfect conversions every time — we applaud this product for its attention to that detail...

Do You Have a Naked Printer?

If you run Windows and have a printer, your printer is naked without the HALO Desktop Imager. This is the program that fills a huge gap in your capabilities. It is a complete imaging utility, ideal for creating, altering and printing pictures. Downright simple to use — just select from the menus to add professional effects to any image. The unmatched printing capabilities produce crisp, clean images at any size — wall size posters are effortless.

A unique "test strip" feature saves time, paper and resources by allowing you to build contact sheets of miniaturized images with all the variants and

your printer and use it every time to get the finest quality prints. You can even select from over 100 halftone combinations and patterns to ensure great images.

Turn Images Into Photographs.

Less than perfect photos can become unforgettable images using the tools found in HALO Desktop



Print any image any size, including large multi-page posters!

Imager. Correct bad contrast, washed-out colors and dull tones. Smooth ragged edges and sharpen details that appear out of focus on the original. Add special effects, scale your image to any size, crop, flip, flop and undo any step you're not happy with. You get a complete selection of specialized filters that add effects and remove defects. It's no wonder that HALO Desktop Imager is the choice of professionals. Now you can have the same quality studio tools and output with no learning curve and in an easy-to-use package. If you work with color, grayscale or black & white, there are more useful tools here than any other package we've tested, seen or heard of.

Works with All Your Software.

HALO Desktop Imager is a wonderful utility that has been designed specifically to ease the drudgery of working with images. Years of imaging expertise at Media Cybernetics have been used to fine tune this product not only to do sophisticated image processing, but also to make it an ideal companion to all your desktop publishing draw program and word processing software (CorelDraw, Ami-Pro, Word for Windows, PageMaker, MS Publisher). These packages are just not complete without HALO Desktop Imager.

Screen Capture, at Your Fingertips.

HALO Desktop Imager provides a screen capture feature that allows you to capture the screen or portions from any Windows program. Now you can quickly capture the output from any program and save it into one of the many file formats. Capture a window, an area, or the entire screen quickly and at the touch of a user definable "hot-key."

Your Imaging Worries Are Over.

Overcome many of the typical problems facing dealing with images:

- Save valuable disk space by saving images out in one of the many file compression formats supported.
- Work in 24-bit images with a VGA or SuperVGA through the amazing M/Color technology. You can even have multiple 24-bit images on your VGA at the same time — all looking fantastic.
- Get great image quality from your laser or dot matrix printer. Generally, printer halftones are truly lacking. With over 100 halftoning options, HALO Desktop Imager offers solutions for all printers. Now get the best image quality right at your desktop.

- Convert all your images in one operation. Don't worry, use the batch conversion feature to convert files in groups. And the software conversion is fast. The program can even convert Color images to grayscale, black and white or even optimized palette or M/Colored 8 bit color files.
- Crop your images or add matte margins from a variety of options. Resize your image using bilinear scaling or pixel replication — get the results you want.
- Made a mistake? Don't worry, HALO Desktop Imager provides up to three levels of undo for each image open.
- Own a scanner? HALO Desktop Imager directly supports most color and grayscale scanners. Just startup the program, turn your scanner on, and let HALO Desktop Imager take over. Never have your images looked so good!
- Ease of use and really fast. The HALO Desktop Imager is quick, easy to use and definitely fast. This program was designed to take full advantage of Windows, but has been optimized for speed and to limit your key and mouse strokes. For example, need to cut a color portion of an image and paste it in a grayscale image? Just use "Copy" and "Paste" — the imager does the conversion invisibly.
- Don't know about imaging? In addition to online help, a complete online tutorial and introduction to imaging helps get you up to speed fast!

Presentation Slides Instantly.

Stand out presentations become a snap with HALO Desktop Imager. Just load your image (from clipboard, directly from scanner, file, or screen capture) enhance it, color reduce it (for fixed palette computer presentations), or use the fantastic halftoning features to make outstanding handouts. No longer does every image reproduced have to go to the graphics department or out of house for preparation and printing.

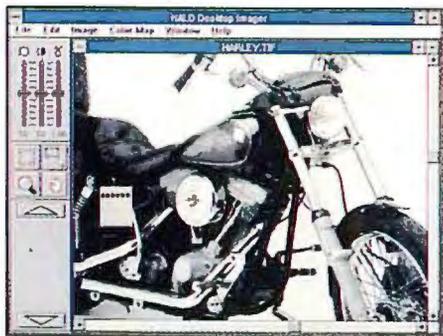
For Sophisticated Color User, As Well.

If you really want to get into fancy color manipulations, the complete color map editor allows you to work in R, G, B or C, M, Y color spaces and perform very sophisticated color corrections and special effects with a touch of your mouse. You can even save color maps for complete calibration control of your printers and scanners.

More on Postering.

A really neat feature is the postering capability. Take any image and blow it up to any size poster, including wall-sized, using your standard printer. Just choose the poster print option, select the size of the poster and hit print. Worried about jagged edges? HALO Desktop Imager uses sophisticated image processing techniques, instead of standard pixel replication to make perfect posters, to make wonder posters.

If you have any images on your computer, then the HALO Desktop Imager is an indispensable utility.



Do it all — Scan, File Conversion, Special Effects and much more!

combinations or image enhancement to see an exact preview of your work, either on the screen or printed on one sheet. Tune your image to match the exact qualities of your printer. Find the best calibration for

HALO IMAGER

BAQ3129 HALO Imager 5¼" & 3½" \$129.00
IBM compatible, 512k, hard drive, graphics card

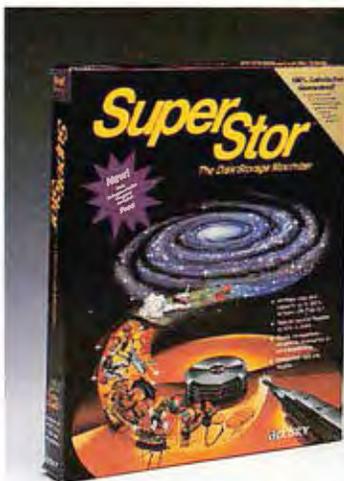
Increase Your Disk Capacity (On The Fly) By Up To 300%...

This unique product, unlike conventional file compression software, employs sophisticated "on-the-fly" compression algorithms to expand the storage capacity of your drives (hard disk or floppy) by up to 300% — and in many cases more!

SuperStor is simple to install and is 100 percent guaranteed for safety. You don't have to buy any new hardware, fiddle with jumpers, switches, hardware interrupts or even open your computer! Just slip in the diskette and you'll instantly notice significant increases in capacity and speed.

SuperStor is perfect for all applications, including your word processor, spreadsheet, database, graphics and CAD/CAM systems. Specialized applications with highly compressible data can achieve an increase in capacity as much as 8 times — 800%. It supports DOS 3.2 and up including DOS 5.0, Dr. DOS, and Windows 3.0, and allows DOS 3.2 and 3.3 users to easily break the annoying 32 megabyte limitation.

Even with all this high-tech efficiency going on around you, SuperStor does not change the way you work. All compression and decompression occurs without your help. SuperStor's automatic operation eliminates the need to learn special commands or use spe-



cially created logic disks. You don't even have to hit one keystroke for this amazing product to work its magic. Just use your computer and applications like you always have.

Your Word Processor And Spreadsheet Will Run As Fast As Ever!

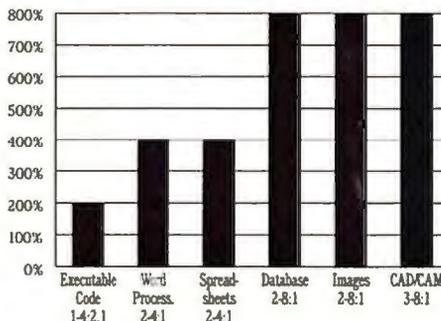
SuperStor is the fastest data compression product on the market today, resulting in no measurable loss in your system's overall performance. All of your applications will run just as fast as they ever have. In fact, in some cases SuperStor will actually increase your system speed! SuperStor even includes a caching system that adds additional speed. How's that for power?

A little exploration into the easy-to-understand manual can reap some powerful rewards. For example, with just a couple of keystrokes you can create your own compression configuration. Compress your entire disk, or any portion of it, to maximize ease of use, compression efficiency and overall system performance. In just a few minutes, you can become an advanced SuperStor user.

How Much Space Can I Really Save?

The exact amount of compression you'll achieve depends on the data in the files you store on your computer. Files which use a limited number of characters or contain repeated sequences of characters will compress better than those containing purely random data. While this is true for many compression programs, SuperStor's advanced

technology increases storage capacity even more. And SuperStor is the only compression system we've seen that compresses executable code. In addition to compressing the data in your files, SuperStor's ingenious file management techniques saves space on your disk by reducing the number of reserved byte units. Normally, these savings will amount to 4 to 8 times less space on your disk, regardless of the data in the file.



Reduce Time & Cost of Backing Up.

Since your data is now occupying less disk space, you'll find that backups now require less media. In fact, an average savings of 50% on the number of floppies is normal for SuperStor. And, of course, your backups are much faster. In addition, you can write on floppies in compressed mode for backups or, for exchange with other systems, in regular DOS format.

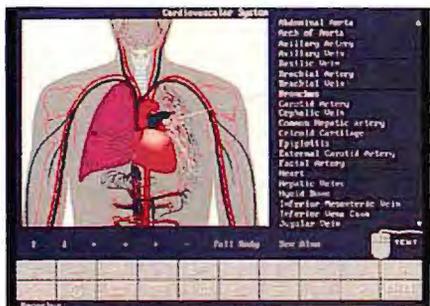
SUPERSTOR

BAQ3865 SuperStor 5 1/4" & 3 1/2" \$119.95
Requires 512K memory.

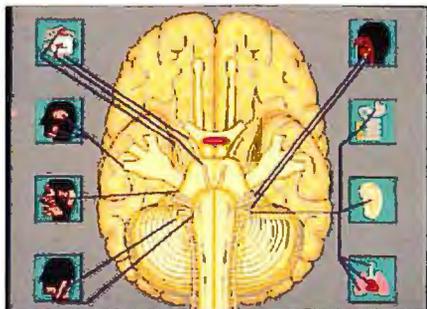
A Guided Tour of the Human Body.

The human body. A perfect machine. It grows and develops, protects and heals itself and is designed to last for decades. Now the wonder of the body is combined with the power of the PC to produce a fascinating journey into its structure and functions. You'll see detailed, full-color graphics of the entire human body and a comprehensive database of facts, descriptions and explanations. Do you know the exact function of the hypothalamus? How about the kidneys? How do bruises heal? How does the brain work, and where is your duodenum? Experience a world of knowledge and beauty that provides profound insight into life itself. It's called BODYWORKS, and it could be the most interesting software program you'll ever own — perfect for students, artists and hobbyists.

oping enormous strength. Discover how the delicate muscles in the eye allow instant focusing and movement, far beyond the capabilities of even the most sophisticated camera. Move to the nervous system, and see how the signals sent to the brain can detect even the slightest touch to the skin. Learn about how your nervous system allows the brain to instruct the body to perform complex movements — like walking! Then select the digestive system — the body's systematic breaking down of food. Its incredible ability to process and extract nutrients. From the mouth to the intestines, BODYWORKS shows you in great detail how your body nourishes itself, how it accumulates fatty tissue (and how it uses fat).



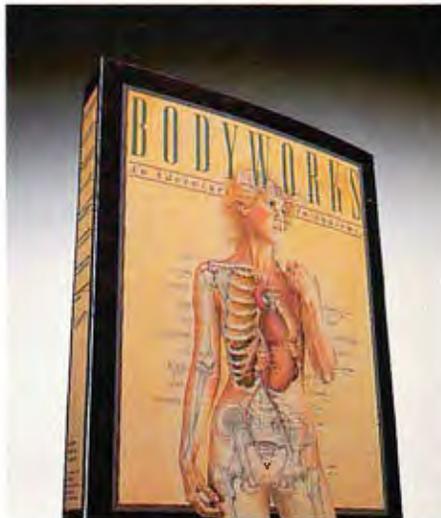
Explore the cardiovascular system...



...Or discover the workings of the brain.

You begin by exploring the major body systems: select the skeletal system and view the bones and how they work, the joints, mechanics of the ball and socket. Select the muscular system and see the tremendously resilient human muscle, capable of devel-

oping enormous strength. Discover how the delicate muscles in the eye allow instant focusing and movement, far beyond the capabilities of even the most sophisticated camera. Move to the nervous system, and see how the signals sent to the brain can detect even the slightest touch to the skin. Learn about how your nervous system allows the brain to instruct the body to perform complex movements — like walking! Then select the digestive system — the body's systematic breaking down of food. Its incredible ability to process and extract nutrients. From the mouth to the intestines, BODYWORKS shows you in great detail how your body nourishes itself, how it accumulates fatty tissue (and how it uses fat).



aged, and exactly what happens when someone suffers a heart attack. When your child asks "Where do babies come from?" you can simply select the section on the human reproductive system for a clinical explanation of the process.

You'll see all of the organs and tissues of the body, each described in exhaustive detail. Colorful graphic screens also provide information on sports injuries, first-aid advice on illness, insect and animal bites, along with other topics. Just click or select any organ or system for instant retrieval of thousands of facts.

BODYWORKS

BAQ4101-5 BODYWORKS 5 1/4" \$79.95
BAQ4101-3 BODYWORKS 3 1/2" \$79.95

**20-MHz 386SX
NOTEBOOKS**

WITH BIGGER
HARD DISKS
AND BETTER
BATTERY POWER
MANAGEMENT,
THESE 23
ULTRAPORTABLES
MAKE IT EASIER
THAN EVER
TO ENJOY
DESKTOP-CLASS
COMPUTING
WHEREVER
YOU LIKE.

MORE POWER To You

Is it a blessing or a curse? Anytime, anyplace, you can boot up and start computing. With bigger hard disks, brighter displays, longer-lasting batteries, and improved power management, the latest crop of 386SX notebooks is changing the definition of the once-simple concept called work. Now you can work in an airplane, out on the deck, or while carpooling to the office, and even if you never stray from a power outlet, your aching muscles

**MICHAEL
GOODWIN**

PHOTOGRAPHS BY STAN MUSELIK



will welcome the low 7- to 10-pound traveling weights. No longer are you limited to simple word processing chores when you're on the move: These 20-MHz systems have the authority to recalculate complex spreadsheets or run *Windows*-based presentations.

The best and the brightest of these miniature laptops do a lot of things very well, from serving up crisp screen images to delivering top performance. Unlike desktops—which let you choose from a variety of displays, keyboards,

and hard disks—notebooks make it difficult to swap components, so what you see is what you get. In this review of 23 notebooks, we've found one Best Buy that covers all the bases: Texas Instruments' TravelMate 3000 WinSX.

Sleepy Time With the SL

Engineers need to meet three challenges before notebooks can offer full desktop power: Create a lightweight, high-quality color display that doesn't consume much power; provide desktop

expansion without adding pounds; and extend battery life so a notebook can outlast a cross-country flight.

Soon you'll see affordable, low-power, color notebooks with sharp active-matrix displays, and many of the notebooks reviewed here offer optional 80MB hard disks, compared to the 40MB to 60MB limits of the notebooks we reviewed last November. By midyear you can expect to see notebooks shipping with PCMCIA (Personal Computer Memory Card Interna-

Buying Smart: A Notebook Primer

No matter how fast *Windows* runs on your new 20-MHz SX notebook or how easy it is to read the bright, crisp display, a day of schlepping the thing around will convince you that there's no such thing as too light or too small. But other issues also play a part in your buying decision.



PORTABILITY

All these systems fit easily into a briefcase, but some will build up your biceps (and wear down your patience) a lot faster. There's no reason to consider anything heavier than 10 pounds traveling weight—that includes the PC, the battery, the AC charger and power cable, and the modem. One notebook—the Librex 386SX/20—weighs only 6.6 pounds in this configuration, and when you're running to catch a plane, those 3 pounds can really make a difference.



BATTERY

If you're never more than 6 feet from a power plug, this is a nonissue, but for most of us, it's crucial. Even if you generally watch the in-flight movie on business trips, you'll appreciate being

able to check a spreadsheet in the middle of a meeting or manage a modem session when the power plug and phone line are on opposite sides of the room.

The size and design of the power cell affect battery life substantially, but that's not the whole story. Depending on the system and your work habits, power-saving options will give you somewhere between 30 minutes and 6 hours of extra computing time. Hard disk and backlighting timeouts are standard; all the systems here have them. In addition, when you have to walk away from the notebook, all SL (and many SX) notebooks let you reduce power consumption to near zero via a suspend or sleep mode that slows or stops the CPU.

Depending on the notebook, you can put it to sleep by pressing a special button, or you can set it to drop off automatically when you haven't touched a key for a specified period. When the notebook is awakened (by a key press, a timer, or a modem call), operations resume from the point you left off. Look for a suspend/resume button, so you can stop the clock the second you quit work-

ing, rather than waiting for the timeout. And if you use *Windows*, make sure the notebook can suspend itself without upsetting that program.

We test battery life two ways: First we benchmark the length of a battery session under full usage, a worst-case scenario with power-saving features like hard disk timeout disabled. Then we run a best-case benchmark, with all power-saving features enabled, and include several sleep periods. Three hours of battery life is a reasonable minimum under full usage, and you should demand at least 5 hours with power saving. Reality should fall somewhere in between.

Toshiba's T2200SX turned in the best full-usage power score: a little over 3 hours. As you might expect, Zenith Data Systems' MastersPort 386SL walked away with the honors for power saving—enabled battery life: 8 hours, 22 minutes.



PERFORMANCE

All things being equal, the faster your processor runs, the quicker you'll be done with your work—and 20 MHz is plenty fast. In calculating the overall perfor-

tional Association) slots—an interface standard for credit card–size peripherals such as pop-in fax-modems, RAM upgrades, and ROM-based applications (for more information about PCMCIA, see *Industry Outlook*).

Battery life is another story. Even with the latest nickel-hydrate batteries, these SX systems rarely deliver more than 2½ hours of battery life in full use (with power-saving options disabled for top functionality). Fortunately, you can make your notebook ses-

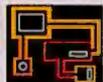
sions last longer right now, thanks to recent gains in power management technology. Power-saving options range from disks and screens that timeout when not in use to a suspend/resume button that puts the unit into temporary “sleep” mode.

With power management, however, comes slower performance and annoying delays as the machine wakes up from hard disk timeouts. Also, the sleep mode of many of these units can't be used under *Windows* without crash-

ing the system. That's why Intel's SL chip is big news—it lets you put your notebook into an ultra-low-power sleep mode and suspend *Windows* safely.

Only one SL—the ZDS MastersPort 386SL—was shipping in time to be reviewed here, and its power management lives up to the SL's promise. Its full-usage battery life is actually on the low side (a bit over 2 hours), but with all power-saving features in use, testing ran an amazing 8 hours, 22 minutes. Under “typical” usage, we estimate

mance rating, we weight the T-2-3 tests the highest, but if you run a lot of disk-intensive applications, keep a close eye on the dBASE test scores. All tests were done with power-saving features turned off, so if you're planning on marathon 5- to 6-hour sessions away from a power plug, expect slower performance. Zenith Data Systems' MastersPort 386SL grabbed first place, thanks to its built-in memory cache controller and 64K of cache memory.



EXPANDABILITY

Many applications benefit from a large RAM disk or lots of expanded memory, so we consider 4MB RAM capacity the minimum, especially for *Windows* users. All but one of the notebooks reviewed in this roundup provide at least 60MB of storage, but *Windows* hounds will want one of the 80MB machines. Notebooks that offer an internal modem and an optional expansion chassis or docking station are preferable. Compaq and Kris tie for top honors.



SCREEN

All these systems have backlit or sidelit displays.

The bigger the screen, the better—but watch out for wide screens that distort graphics and make text hard to read. Nor is size everything: Make sure the characters are sharp and crisp, with good contrast. The more gray shades your notebook can display, the better color graphics appear. Look for at least 16. Acer, Librex, and Toshiba have the best displays in the roundup.



KEYBOARD

The closer your notebook keyboard adheres to the standard 101-key model, the better. Emulated keys (which, for example, force you to hold down a special key to turn a cursor key into <Page Down>) slow typing and increase errors. Look for dedicated cursor keys in the familiar inverted T and dedicated page and function keys. Standard layout for <Alt> and <Ctrl> makes life easier, too. AT&T's Safari NSX/20 and Zenith Data Systems' MastersPort 386SL share the keyboard championship.



PRICE

We base our cost comparisons on street price.

For each system, our research staff calls dealers in cities across the country and gets a quote in the standard *PC World* configuration: 4MB RAM, 40MB to 60MB hard disk, 1.44MB internal floppy drive, 2400-baud internal modem, and DOS. Results are averaged. The lowball boss in the roundup is Blackship's \$2244 386SX/20 NB.



SERVICE AND SUPPORT

The key service issue on notebooks is a quick turnaround, plus data recovery—there's little to repair. We evaluate central support by calling each vendor three times and scoring responses for quality and courteousness, with extra credit for long hours, fax lines, and BBS's. We rate dealer support by tallying the requirements vendors impose on dealers for training, inventory, and dedicated support staff; we give extra credit for vendors who operate their own stores. Best service and support: Zenith Data Systems, with Librex and Dell in hot pursuit.

PC WORLD TEST REPORT

Zenith's Fast SL Slips Past the SX Speedsters

Thanks to its fast SL processor, Zenith Data Systems' MastersPort 386SL aces the competition. Compaq's LTE runs a strong number two, and our Best Buy from Texas Instruments ranks close to the top.

1-2-3

ZDS SL	1145
Compaq	1172
Blackship	1299
Kris	1320
Librex	1342
Dell	1356
Altima	1358
Philips	1370
Texas Instruments	BEST BUY 1371
ZDS SX	1371
Tangent	1386
Eltech	1401
Samsung	1416
Micro Express	1423
AT&T	1424
ALR	1428
AST	1433
Toshiba	1435
Panasonic	1437
NEC	1507
Zeos	1534
Acer	1586

WordPerfect

ZDS SL	86
Compaq	88
Kris	97
Texas Instruments	BEST BUY 98
ZDS SX	99
Toshiba	100
Blackship	101
Dell	102
Librex	102
Philips	102
Tangent	102
Samsung	103
AST	104
Altima	105
AT&T	105
ALR	106
Eltech	106
Panasonic	109
Micro Express	113
Acer	114
Zeos	116
NEC	119

Windows 3.0

ZDS SL	145
Compaq	153
Kris	163
Tangent	164
Blackship	165
Texas Instruments	BEST BUY 169
Altima	173
Micro Express	173
Toshiba	173
ZDS SX	174
Librex	175
Acer	176
Panasonic	176
Zeos	179
AT&T	182
Philips	182
Samsung	182
AST	183
Dell	183
Eltech	185
ALR	192
NEC	192

you'll be able to go 5 or 6 hours before you start hunting for the nearest plug. Another benefit of the SL chip—its built-in memory cache controller—shows its worth in the MastersPort too: This system is *blazingly* fast.

One more piece of good news. The prices on these notebooks are moving in one direction only: down. So use these reviews to choose your best system, then go out and cut a great deal—and that means more power to *you*.

Michael Goodwin is an associate editor and T.J. Byers a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 909.

Staying Alive: How to Keep Your Battery Humming

T.J. Byers

When you're away from an AC outlet, a dead battery can transform your expensive notebook into a royal pain in the shoulder. Fortunately, taking a few simple precautions can keep it from turning into a pricey paperweight halfway between Los Angeles and New York.

The easiest solution is to bring along extra charged batteries. When the old battery dies, simply slide in a fresh one and keep on working. If

your notebook permits swapping without turning off the power, the switch may take less than 30 seconds. Each battery adds a couple of pounds and costs from \$75 to \$150.

You can charge extra batteries while the notebook is plugged into an AC outlet, but a faster solution is to pay \$50 to \$229 for an external quick-charger. Chargers bring batteries up to full power much faster than a notebook's internal charger.

dBASE IV

ZDS SL	766
Compaq	799
Texas Instruments	BEST BUY 874
Dell	898
Toshiba	899
ZDS SX	902
Tangent	914
Kris	917
AST	926
Samsung	926
ALR	927
Philips	940
Librex	954
Blackship	959
Eltech	980
Altima	983
AT&T	991
Zeos	1003
Panasonic	1021
NEC	1039
Acer	1040
Micro Express	1042

Paradox

Compaq	715
ZDS SL	728
Blackship	757
Kris	763
Toshiba	763
ZDS SX	766
Texas Instruments	BEST BUY 774
Dell	777
Philips	787
ALR	788
Altima	788
Samsung	792
Tangent	799
Librex	805
Eltech	816
AST	821
AT&T	838
Micro Express	845
Acer	847
Panasonic	855
NEC	907
Zeos	964

Time in seconds.

Methodology

We tested all the computers with 4MB RAM except the Acer, AST, Micro Express, Panasonic, Tangent, and Zeos, which we tested with 5MB RAM. The systems' hard disks ranged from 20MB to 60MB. We used the vendor's version of DOS or Microsoft DOS 5.0.

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We perform various changes and run recalcs on each. Finally we use the MAPS add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

WordPerfect

We reformat three *WordPerfect* 5.1 documents that vary in size from 5K to 55K. The files are text with some boldface and underlining; one document includes a TIFF image.

Windows 3.0

Timing begins and ends at the DOS prompt. We launch *Windows* along with a macro that loads *Microsoft Excel* with a financial worksheet and initiates a recalc. Then the macro loads *Lotus's Ami Pro* along with a 50K document that contains a 500K TIFF image. Finally, the macro launches *Micrografx Designer*, opens a drawing, displays it on screen, and exits to DOS.

dBASE IV

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

Paradox

Starting with an orders table, we compare each record with an available stock table. The application finds the current price for the items and inserts the resulting record into an invoice table.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Most notebooks still use nickel-cadmium batteries, and the way you treat them makes a big difference in how long they last. For instance, batteries that are repeatedly used for a short period of time, like half an hour, and then recharged develop a "memory" problem. The battery starts to think it's out of juice when that familiar half hour is up, even though it may have many hours of power left. One reason the new nickel-hydride batteries are so swell is, they don't have this problem.

You can prevent (or cure) the memory effect by making sure your battery is fully discharged before you

recharge it. If you're not in a hurry, simply turn the notebook on, defeat all the power-saving features like screen blanking, and let it run down overnight. A faster alternative is the BATTKILL batch file. To create it, type the following three lines from the DOS prompt.

```
COPY CON BATTKILL.BAT
DIR > XXX
BATTKILL
```

To save the batch file, press <Ctrl>-Z<Enter>. When you run the file (by typing BATTKILL and pressing <Enter>), it runs a directory over and over, saving it to disk file XXX, until the battery is totally dead—usually

an hour or two. Then you can recharge the battery overnight.

Like everything else in the entropic universe, a battery has a limited life span. As it nears its end, the amount of power it can hold drops off gradually. This usually happens after 500 to 1000 cycles—about two years of normal use. Batteries that are not fully charged before use, are charged frequently with a quick-charger, or go unused for extended periods don't live quite as long. So be sure to discharge and charge stored batteries every three to six months, and keep them high and dry.

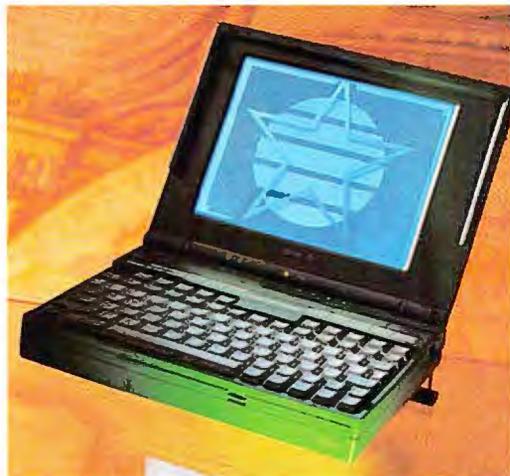
AcerAnyWare 1120NX

PROS: Small, big screen, crisp display

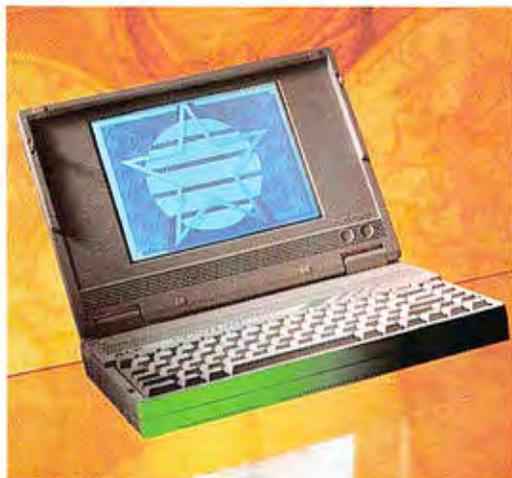
CONS: Heavy, slow, short battery life, odd keyboard

The first thing you'll notice about Acer's midpriced (\$3623) AnyWare is its big, beautiful screen: a full 9½ inches diagonal and graced with sharp letters and excellent contrast. And while the twin batteries bring its traveling weight close to 10 pounds, its profile is very trim. Performance, however, is unimpressive across the board—and the low 5MB RAM limit should keep it that way. Battery scores are ho-hum: You get only a bit more than 2½ hours in full-use mode. On the bright side, Acer's sleep function is guaranteed to work safely with *Windows*.

The keyboard may take some getting used to. The cursor keys are in a nonstandard layout, key travel is shallow and hard, and all the function keys and page keys are arrayed in two rows along the top. The AnyWare's dynamite screen may be enough to hook traveling presenters, but most users will want a faster, lighter notebook.



Flat screens don't get much better than this—a super display makes the AcerAnyWare a good choice for presentations.



Your fingers will appreciate the Venture's top-notch keyboard, and your eyes will enjoy its crisp, clear display.

ALR Venture 386SX/20

PROS: Great keyboard, good-looking display

CONS: Relatively heavy, awkward screen controls, no internal modem

There are two good reasons for giving ALR's \$3262 Venture a close look: a sharp display with excellent contrast, and a well-designed keyboard. Performance is passable, but the 9.5-pound traveling weight is pretty high and the 2-hour battery life fairly low. Power-saving features will more than double that, but you can't suspend *Windows* safely.

The Venture's ergonomics could use some refinement: Brightness and contrast controls are awkward push-and-twist knobs, there's no indicator to tell you when the battery is fully charged, and the suspend/resume switch is a tiny stud on the back of the system. Some other quibbles: There's no internal modem option, and the service contract lacks a turnaround guarantee. The superb keyboard and display make this a good choice as a weekend carry-home, but frequent travelers may want a lighter notebook with better staying power.

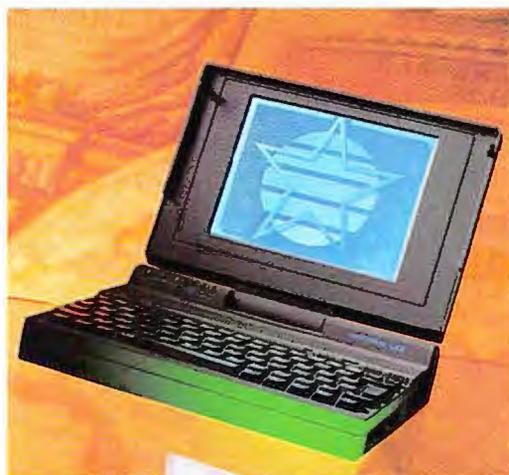
Altima LSX

PROS: Light weight

CONS: Small screen, some controls hard to reach or operate

For \$3183, Altima will sell you a handsome, reasonably fast notebook that, at a lean 8.3 pounds traveling weight, is a breeze to whisk through an airport. Battery power won't last much more than 2 hours during full-bore computing, but if you enable the LSX's complete set of power-saving features, you'll reach almost 5½ hours.

You can't suspend *Windows* safely, however. And don't count on the Altima to show off in front of clients or customers—the screen ties for smallest in the roundup. Ergonomics could be better too: Page control keys are emulated, brightness and contrast slides are unusually hard to operate, and every time you need to get to the AC power connector or the phone plug—which could be many times a day—you'll lose precious seconds opening the sticky rear-hatch cover. But if easy portability is important, the Altima makes good sense.



Light and airy at 8.3 pounds traveling weight, the LSX will keep cooking for over 5 hours with power saving turned on.

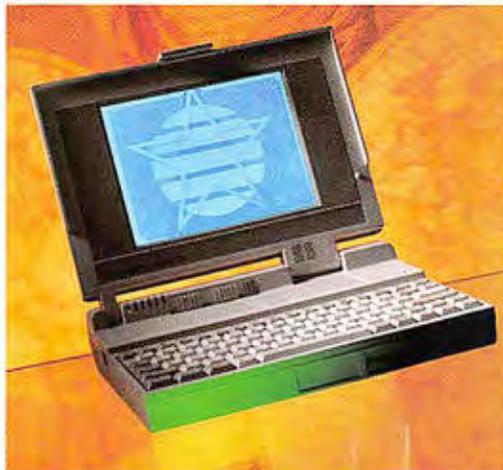
AST Premium Exec 386SX/20

PROS: Good battery life, excellent screen contrast, fine keyboard layout

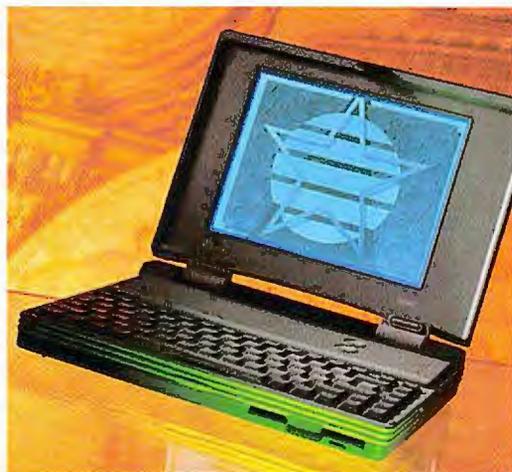
CONS: Pricey, small screen, relatively heavy

The Premium Exec 386SX/20 is a fairly hefty 9-pound notebook with a fairly hefty \$3566 price. But the Exec lets you work long and prosper away from the power plug, whether you're typing furiously on a report or dawdling over a spreadsheet. If you prefer the convenience of full-use mode, you'll get 2½ hours, and with the excellent power-saving features set to the max, you'll last 5½ hours. And whether you use the auto-sleep timeout or the manual suspend/resume function, you can suspend *Windows* safely—and wake it up with an incoming modem call.

The AST's screen ties for smallest in the roundup, but its sharp, black characters compensate—and the keyboard layout is almost perfect. Some details could be better: The brightness and contrast slides and the stubborn front latch drove us crazy. All told, however, decent speed, good battery life, and a crisp screen add up to a solid value.



If you plan on marathon sessions away from the power plug, you'll like the way the Exec can stretch your battery.



The Safari can help you survive the worst the business jungle can throw at you. You'll love the big, beautiful screen.

AT&T Safari NSX/20

PROS: Huge screen, terrific keyboard, long battery life

CONS: Expensive, thin screen characters

The Safari NSX/20 isn't cheap—but good things seldom are. For \$4245 you get a screen that ties for biggest in the roundup, a "perfect" keyboard, a mouse, and twin batteries that will keep you working more than 3 hours with power saving disabled. The Safari's 8.5-pound traveling weight is more than reasonable, and the bright, 10-inch screen delivers a crisp, even image with an unusually wide viewing angle.

Neat touches include a handsome curved design, a set of eye-catching LCD icons just beneath the screen, and the ability to control speaker volume, inverse video, screen timeout, and so on from handy keys. The Safari is ideally suited for *Windows*, which AT&T preinstalls: S/R is guaranteed *Windows*-safe, and an optional 80MB drive provides more than enough room for even the most serious *Windows* devotee. If not for the Safari's high price, we'd surely be talking Best Buy.

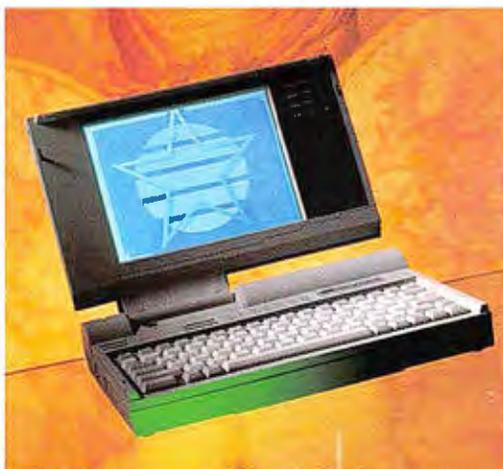
Blackship 386SX/20 NB

PROS: Fast, very low price, elegant design, safe *Windows* S/R

CONS: Small screen, short battery life, no charge indicator, no modem option

Not every notebook buyer is fanatical about battery life. If you're not, this Blackship could well be your best deal. For an astonishingly low \$2244, Blackship's elegant 386SX/20 NB is loaded with value—from hot performance to a light 8.6-pound traveling weight. The NB took fourth place for overall performance and came in third in the *1-2-3* and *Paradox* tests. You even get an auto-sleep function that's safe to use in *Windows*. And if elegant style matters to you, you'll go for the NB's good-looking, asymmetrical case and ball-shaped power switch.

The NB's battery life is quite short—1:50 with power-saving features defeated and only 3:16 with them enabled. The screen is on the small side, there's no support for an internal modem, and the keyboard has nonstandard cursor keys and emulated page keys. But if you crave burning speed and the lowest price in the roundup, you've found it.



Top speed and a rock-bottom price are always a winning combo, and the NB sweetens the deal with light weight.

FEATURES EVALUATION

Bright and Light

These featherweight SX/SL notebooks deliver power aplenty, with prices and traveling weights dropping by the month.

- Yes
- No
- n/a = not applicable

	Acer AnyWare 1120NX	AIR Venture 386SX/20	Altima LSX	Exec 386SX/20	AST Premium Exec 386SX/20	NSX/20	AT&T Select 386SX/20 NB	Blackship 386SX/20	Compaq LTE 320N+ ¹	Dell System 320N	Eitech 3026e 386SX/20	For NBS 386SX/20
Standard features												
Street price ²	\$3623	\$3262 ³	\$3183	\$3566	\$4245	\$2244	\$4848	\$3798	\$2349	\$2970		
Windows included	○	○	○	○	●	○	○	○	○	○	●	○
Portability												
Traveling weight (pounds) ⁴	9.6	9.5	8.3	9	8.5	8.6	9.5	8.3	8.2	7.4		
Dimensions	8.5x11x2	12.2x8.6x2.1	11.1x8.6x2.2	11.5x9x2.3	12x9.9x1.8	11.7x8.5x2	11.1x8.8x2	11x8.5x2.0	11.6x8.7x2.3	8.6x11x2		
Volume (cubic inches)	187	220	210	238	214	199	195	187	232	189		
Battery												
Battery life (power saving on/off)	3:52/2:17	4:50/2:02	5:25/2:12	5:27/2:32	5:13/3:09	3:16/1:50	5:48/2:46	5:01/3:06	7:38/5:33	n/a ⁵		
Indicator shows full charge	●	○	●	●	●	○	●	●	●	●	●	●
Suspend/resume button	○	● ⁶	○	● ⁷	●	○	●	●	●	○	○	○
Safe Windows S/R or auto-sleep	●	○	○	●	●	●	●	○	●	○	○	○
Expandability												
RAM capacity	5MB	8MB	8MB	8MB	6MB	6MB	10MB	8MB	6MB	5MB		
Largest hard disk option	60MB	80MB	60MB	80MB	80MB	60MB	84MB	80MB	60MB	40MB		
Mouse/external keyboard port	○	●	●	●	●	●	●	●	●	●	●	●
Internal modem available	●	○	●	●	●	○	●	●	○	●	○	○
Expansion chassis available	●	○	● ¹⁰	○	○	●	●	○	○	○	○	○
Keyboard												
Cursor keys in inverted T	○	●	●	●	●	○	○	●	○	●	○	●
Dedicated page control keys	●	●	○	●	●	○	○	●	○	○	○	○
Dedicated function keys	●	● ¹¹	● ¹¹	● ¹¹	●	● ¹¹	● ¹¹	●	● ¹¹	●	● ¹¹	● ¹¹
Screen												
Size (square inches)	47	40	35	35	48	37	38	35	36	36		
Shades of gray	32	32	32	32	32	32	16	32	32	16		
Service and support												
Warranty (months)	12	12	12	12	12	12	12	12	12	12		
On-site service available/under \$100	○/○	●/●	○/○	●/○	○/○	○/○	○/○	●/●	●/●	○/○		
Turnaround policy	1 week	○	48 hours	1 week	96 hours	48 hours	○	24 hours	1 week	1 week		
Free unlimited support	●	●	●	●	○	●	●	●	○	●		
Vendor support												
Central support/toll-free	●/●	●/○	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●
Daily support (hours)	11.5	11	10	11	9	10	12	15	9	10		
Weekend support	○	○	○	●	○	○	○	●	○	○		
BBS/fax	○/●	●/●	○/●	●/●	○/○	○/●	○/○	●/●	○/●	○/●		
Vendor-to-dealer support												
Dedicated support staff required	○	○	○	○	○	no dealers	○	no dealers	○	●		
Support staff training required	○	○	○	○	○	no dealers	○	no dealers	○	○		
Dedicated support line for dealers	●	●	●	●	●	no dealers	●	no dealers	○	○		
Service from any authorized dealer	○	○	○	○	○	no dealers	○	no dealers	●	○		

¹ The Dell System 320N won a Best Buy in November 1991.
² Standard configuration includes 4MB RAM, 40MB to 60MB hard disk, 1.44MB internal floppy drive, 2400-baud modem, at least one parallel and one serial port, DOS.

³ Includes pocket modem.
⁴ Including battery, modem, AC charger, and cable.
⁵ Could not complete tests.

⁶ On rear.
⁷ Closing screen activates sleep mode.
⁸ On-off switch can be configured for suspend/resume.

Kris Master	Librex 386SX/20	Micro Express 386 SX/20	NEC Ultralite SX/20	Panasonic CF-370H6	Panasonic	Phillips Magnavox Meridian SX-20	Samsung NoteMaster 386SX/20	Tangent 320N	T1 TravelMate 3000 Win5X	Toshiba T2005X 386SX	ZDS MastersPort 386SX	ZDS MastersPort 386SX	Zeeb 80386SX-20
\$2610	\$2914	\$2513	\$3521	\$3742	\$3899	\$3087	\$2615	\$3084	\$4441	\$4478	\$3732	\$3395	
●	○	○	●	○	○	○	●	○	●	○	●	○	○
9	6.6	9.1	10.4	8.1	9.3	9.4	7.7	7.4	7	8.4	8.7	9	
11 x 8.7 x 2.1	11.7 x 8.2 x 2	11.6 x 8.7 x 2.3	11.5 x 8.7 x 2.5	12.2 x 1.7 x 1.0	8.5 x 11 x 2	11 x 8.5 x 2.1	11.7 x 8.3 x 2	11 x 8.5 x 1.8	11.7 x 8.3 x 1.6	12.4 x 8.3 x 1.8	11 x 8.5 x 2	12.2 x 10 x 2	
198	192	232	250	207	187	196	193	168	155	185	187	244	
3:51/2:04	2:20/1:26	4:31/2:42	5:16/1:51	6:42/2:07	5:13/2:56	3:30/2:44	2:28/1:18	4:15/1:48	5:46/3:13	8:22/2:09	6:41/2:25	4:11/2:07	
●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	● ^a	○	●	● ^b	●	● ⁷	○	●	● ^b	● ^b	●	○	○
●	○	○	●	○	○	○	○	●	●	●	○	○	○
16MB	4MB	5MB	10MB	5MB	8MB	8MB	5MB	6MB	10MB	8MB	4MB	5MB	
85MB	60MB	80MB	60MB	60MB	80MB	80MB	80MB	80MB	60MB	60MB	60MB	60MB	60MB
●	○	●	○	●	●	●	●	●	●	●	○	○	○
●	●	●	●	●	●	●	●	●	○ ⁹	●	●	●	●
●	○	○	○	○	○	○	○	●	●	○	○	○	○
●	●	○	●	●	●	○	○	●	●	●	○	○	○
○	○	○	○	●	○	○	○	●	●	●	○	○	○
●	●	●	●	●	●	● ¹¹	●	● ¹¹	●	●	●	●	●
37	46	36	45	35	35	44	35	48	45	37	40	43	
16	16	16	16	16	32	64	32	32	16	32	16	32	
12	12	15	12	12	12	12	12	12	12	12	12	12	12
●/●	○/○	○/○	●/●	○/○	○/○	●/●	○/○	●/●	○/○	●/●	●/●	○/○	○/○
48 hours	24 hours	48 hours	5 days	○	72 hours	24 hours	48 hours	48 hours	48 hours	48 hours	48 hours	48 hours	○
●	●	●	●	●	○	●	●	●	●	●	●	●	●
●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	○/○	○/○	○/○	●/●
10	12	9.5	10.5	9	13	8.5	10	9	10	n/a	n/a	24	
○	○	○	○	○	○	○	○	○	○	n/a	n/a	●	
○/●	●/●	○/●	●/●	●/○	●/●	●/●	●/●	●/●	●/○	●/○	●/○	●/●	○/○
○	●	no dealers	●	○	○	○	○	no dealers	no dealers	○	●	●	no dealers
○	●	no dealers	●	○	○	○	○	no dealers	no dealers	○	●	●	no dealers
○	●	no dealers	●	●	●	●	●	no dealers	no dealers	○	●	●	no dealers
○	●	no dealers	●	○	○	○	○	no dealers	no dealers	○	●	●	no dealers

⁹ Unavailable at press time.

¹⁰ Third-party expansion chassis, sold by Altima, connects to parallel port.

¹¹ <F11> and <F12> are emulated.

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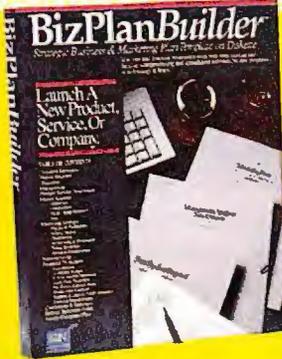
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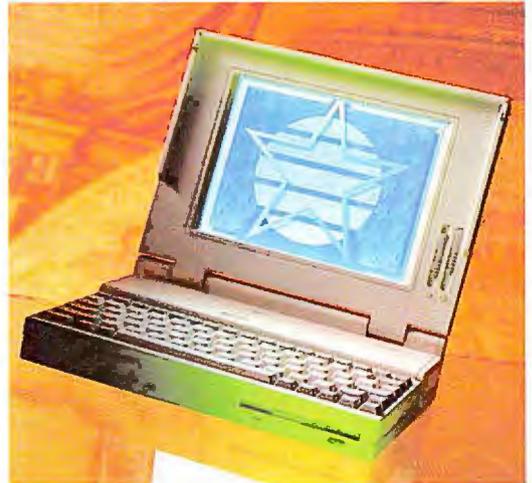
Compaq LTE 386s/20

PROS: Very fast, 10MB RAM capacity, good battery life

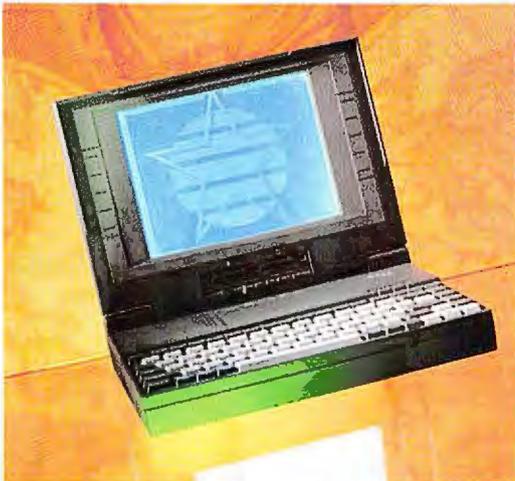
CONS: Very expensive, heavy, awkward keyboard

Last November, the 386s/20 waltzed away with top speed honors. This time ZDS's MastersPort 386SL aced it out, but the second-place 386s/20 is still hot as a \$2 pistol. With its top speed, *Windows*-safe S/R, and 10MB RAM ceiling, the LTE still makes a great *Windows* notebook. Unfortunately, some other things haven't changed either: The \$4848 price is still painfully high, the screen is still relatively small, and the keyboard's L-shaped cursor pad defies intuition.

Despite a heavy 9.5-pound traveling weight, tight design makes the Compaq easy to carry, and its battery life (nearly 3 hours with power saving disabled) is another portability plus. Compaq offers a central tech support line, but most service and support is still handled by dealers, and there's no guaranteed turnaround policy. Still, if you have plenty of cash, the LTE could be your *Windows* dream machine.



Blazing speed and impressive battery life make the 386s/20 one of the best *Windows* road machines on the market.



Dell's 320N+ boasts primo portability and good battery life and performance. As usual, service and support are first-rate.

Dell System 320N+

PROS: Light, small, good keyboard

CONS: Pricy, small screen, inferior contrast

This dandy upgrade to Dell's Best Buy System 320N is almost as light (8.3 pounds traveling weight), just as tiny, and features the same solid performance and quality keyboard. What's new is a higher 8MB RAM ceiling and a new nickel-hydrate battery that delivers over 3 hours of computing—5 hours with power saving. Unfortunately, the screen ties for smallest in the roundup, and contrast could be better. Also, the 320N+ lacks a reliable *Windows* S/R, and at \$3798, it's expensive.

The Dell's three-star performance is par for the course, but if you run a lot of disk-intensive applications, note the fourth-place finish in the *dBASE* tests. This nicely designed unit boasts mouse and external keyboard connectors and a unique sliding rear-hatch cover. Dell's service and support are excellent, as always. So if you need easy portability matched with plenty of battery power, you can do a lot worse.

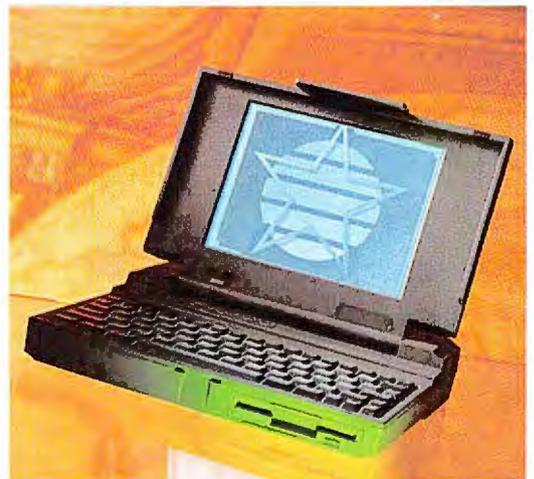
Eltech 3026E

PROS: Very low price, light, extraordinary battery life, *Windows* included

CONS: Small low-contrast screen, awkward front latch, uncomfortable keyboard

Eltech's dark-gray 3026E boasts one of the lowest prices in the roundup (\$2349), an 8.2-pound traveling weight, and splendid battery life—a whopping 5½ hours with power saving defeated. But there's a catch: Not *all* the power-saving features are really disabled. You can't turn off the hard disk or backlighting timeouts, so unless you keep pounding the keys, you'll face delays while you wait for the disk to spin up. But if you choose to turn on all power-saving options, you can get over 7 hours of computing; and you can suspend *Windows* safely.

The Eltech's chassis is a bit large, but an inset screen hinge makes tray-table operation easy. On the downside, the screen is a bit dim, the front latch is hard to open, and the keyboard is nothing to write home about—or on. Still, the low price, long battery sessions, and light weight make this one of the best values around for the frequent flier.



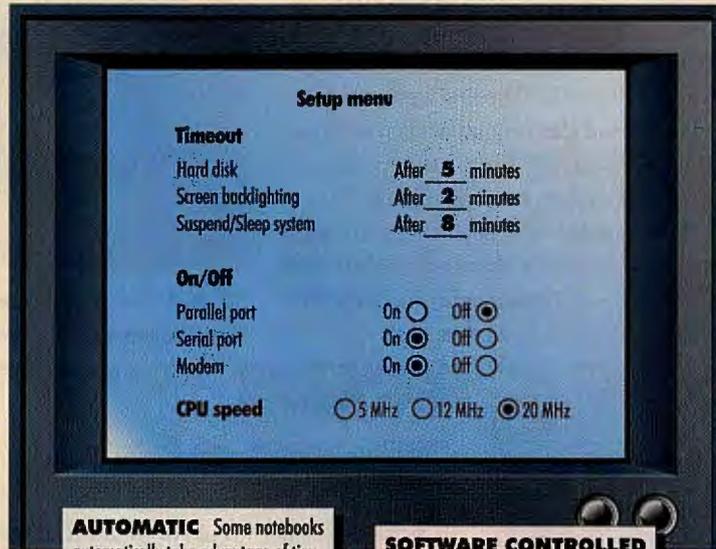
Start with a bedrock price, add a low traveling weight and blockbuster battery life, and you've got a winner.

Laptop Power-Saving Options

How can you work for 5 hours with a 3-hour battery? To maximize the useful time between charges, notebooks can dramatically reduce—and sometimes even eliminate—the power consumed by various system components.

POWER OFF Most notebooks allow you to specify whether they should supply power to infrequently used components such as your modem or serial port. To use the device, you must turn the power back on via the setup menu.

TIMEOUT Many notebooks let you set the amount of wait time before they put certain components, such as the screen and hard disk, in standby mode. These components awaken when needed—for example, when you press a key or software tries to save data. The shorter the timeout the more power you save.



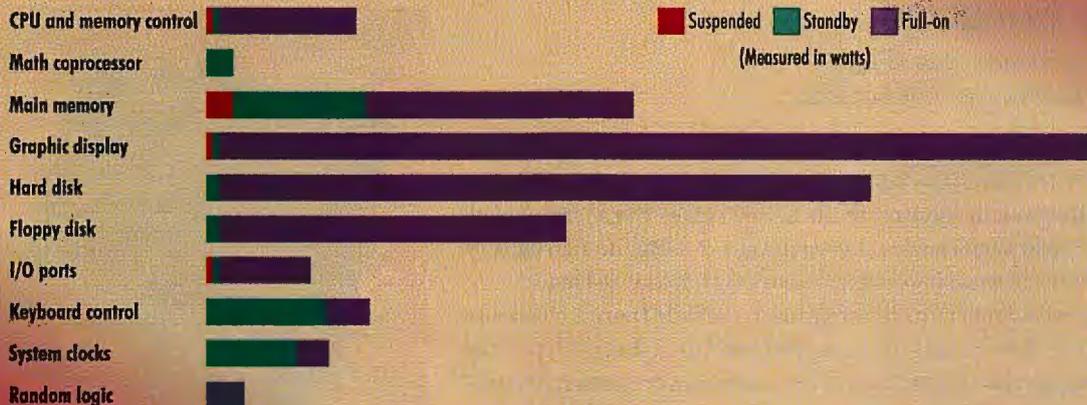
AUTOMATIC Some notebooks automatically take advantage of tiny delays in your work. For example, many turn off power to the floppy drive when it's not in use, and some take catnaps between keystrokes by slowing down the CPU.

SOFTWARE CONTROLLED By the end of the year, we should see software that specifically supports the Intel 386SL processor and exploits its capability to selectively control the power modes of different components. For example, a spreadsheet might power down the hard disk during recalculations or slow the CPU during data entry.

SUSPEND/SLEEP Most notebooks let you set a timeout for sleep (or suspend) mode that not only turns off most components, but also copies system status to low-power CMOS RAM, disables the CPU, and stops all clocks. Some systems include a suspend/resume button or hot key so you can invoke sleep mode the moment you stop working.

CPU SPEED Many notebooks let you throttle down the CPU in order to save power. You'll want to use this feature only when demand on the CPU is light—for example, when entering text in a word processor.

Relative Laptop Power Consumption in Different Modes



The power that notebook components consume, as well as the amount that standby and suspend modes can save, varies greatly. The best power-conservation designs control components individually rather than in groups.

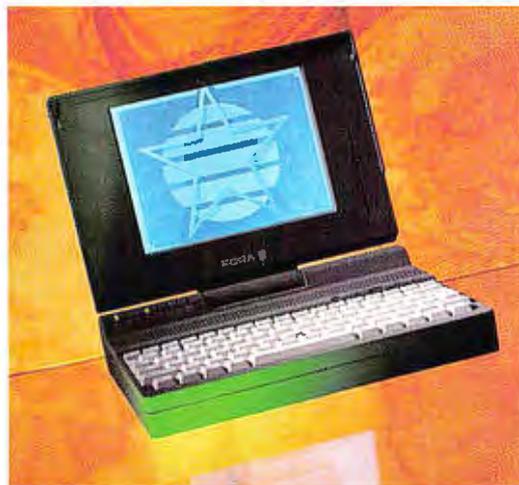
Fora NBS 386S/20

PROS: Extremely light, quite small

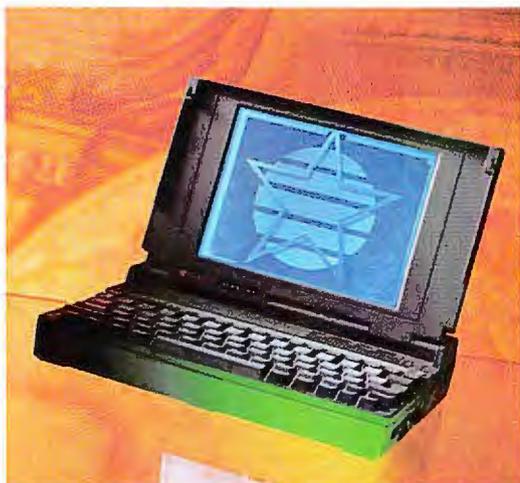
CONS: Compatibility and reliability problems, small screen

This \$2970 notebook is almost identical to the Altima—but the Fora is around \$200 cheaper and has a lower, 5MB fast-RAM limit. It's also a bit smaller and lighter, mainly due to a different screen and a smaller 40MB drive. But these distinctions are moot compared with one huge difference: The Altima worked, and the Fora didn't.

We ended up looking at two Fora notebooks. The first system's hard drive would not read or write. The second unit rebooted when we tried to load *QEMM* and refused to boot consistently due to memory failure. Since Fora could not help us get either system running reliably before our testing window closed, we were unable to run performance or battery-life tests. As we went to press, Fora began shipping a 60MB unit that emulates the Altima more closely—and presumably works better than our test units. But we suggest you test it before you buy.



The 386S/20 is small, light, and reasonably priced—but neither of our two evaluation units worked reliably.



The Master debuts with impressive speed, decent traveling weight, a huge 16MB RAM limit, and a charming price tag.

Kris Master

PROS: Very fast, very low price, 16MB RAM limit

CONS: Small, hard-to-read screen

Kris is a newcomer to our reviews, but that doesn't stop the Kris Master from delivering a winner. The Master provides a strong third-place finish in performance and a fabulous 16MB fast-RAM capacity, all for a low \$2610 street price. Despite its relatively short battery life (2:04 to 3:51), the 9-pound Master easily earns its 3½-star overall rating.

The Kris Master is thoughtfully designed—the screen pivots on a hinge that's inset a full 2 inches, making it easier to deploy in cramped environs. And you can adjust screen display variables by using special keys. Yet even with boldness turned all the way up, letters are hard to read—and the screen is fairly small. Moreover, <Page Up> and <Page Down> keys are emulated, and while key travel is fine, the keys themselves feel wobbly. Despite these minor trade-offs, the Kris Master is one of the best values in the roundup.

Librex 386SX/20

PROS: Lightest in roundup, beautiful screen

CONS: Very short battery life, 4MB RAM ceiling

If you plan to travel a lot with your notebook but don't need to compute *while* you're traveling, the \$2914 Librex should suit you fine. This 6.6-pound featherweight (lightest in the review) gives you a large, sharp screen and solid performance, especially at 1-2-3. But its 1:26 battery life (2:20 with power saving enabled) is strictly for stay-at-homes.

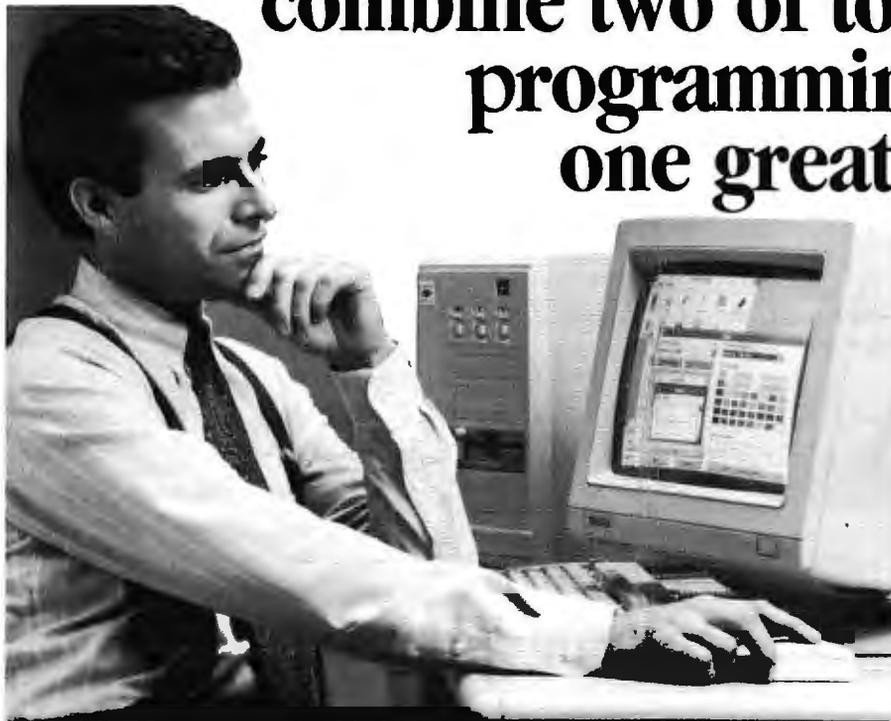
Service and support are very impressive. While there's no on-site service per se, for the first 100 days after you buy, Librex will provide a free exchange unit. All our calls to tech support were answered swiftly and accurately. *Windows* users may balk at the low 4MB RAM limit, and there are a few design flaws: The front latch is tough to open; and the brightness and contrast control wheels are set in the side of the screen, where they're easy to disturb. Still, this is a very good deal for anyone who rarely strays from a power outlet.



The featherweight Librex provides a big, sharp display and superb support, but don't expect to compute coast to coast.

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EXECUTIVE SUMMARY

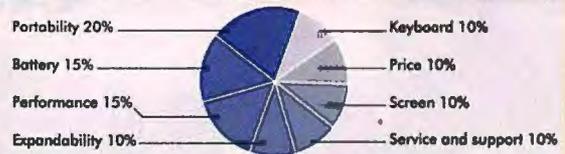
Notebooks on the Run: The 386SX Edge

TI's speedy, lightweight TravelMate won't slow you down—at work or on the hoof.



The Best Buy of the latest 386SX notebook computers, the **TI TravelMate 3000 Win5X** is fast enough to race through your work and light enough to let you race through airports. For such a small unit, it offers surprisingly good battery life and a stunning screen. But if you can pay to play, check out the superfast, incredibly long-lasting **ZDS MastersPort 386SL**, which boasts outstanding portability and a first-rate keyboard.

Key Buying Issues: Percentage of Importance



	Reader service number	Portability	Battery	Performance	Expandability	Keyboard	Price	Screen	Service and support	Overall value
AcerAnyWare 1120NX	714	☆☆☆	☆☆☆	☆☆½	☆☆½	☆☆	☆☆	☆☆☆☆	☆☆½	★★★★
ALR Venture 386SX/20	715	☆☆☆	☆☆	☆☆☆	☆☆☆	☆☆½	☆☆½	☆☆½	☆☆☆	★★★★
Altima LSX	716	☆☆½	☆☆½	☆☆☆	☆☆½	☆☆	☆☆½	☆☆½	☆☆☆	★★★★
AST Premium Exec 386SX/20	717	☆☆☆	☆☆½	☆☆☆	☆☆½	☆☆☆	☆☆	☆☆☆	☆☆½	★★★★
AT&T Safari NSX/20	718	☆☆½	☆☆☆	☆☆☆	☆☆½	☆☆☆☆	½	☆☆☆☆	☆☆☆	★★★★½
Blackship 386SX/20 NB	719	☆☆½	☆☆½	☆☆½	☆☆☆	☆☆½	☆☆☆☆	☆☆☆	☆☆½	★★★★½
Compaq LTE 386s/20	720	☆☆☆	☆☆½	☆☆☆☆	☆☆☆☆	☆☆½	½	☆☆☆	☆☆½	★★★★
Dell System 320N+	721	☆☆½	☆☆☆	☆☆☆	☆☆½	☆☆½	☆	☆☆	☆☆☆☆	★★★★
Eltech 3026E	722	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆	☆☆	☆☆☆☆	☆☆½	☆☆☆	★★★★½
Fora NBS 386S/20	723	☆☆☆☆	☆	*	☆☆½	☆☆	☆☆☆	☆☆½	☆☆½	★★½
Kris Master	724	☆☆½	☆☆☆	☆☆½	☆☆☆☆	☆☆½	☆☆½	☆☆½	☆☆½	★★★★½
Librex 386SX/20	725	☆☆☆☆	☆☆	☆☆☆	☆☆½	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆☆	★★★★½
Micro Express 386 SX/20	726	☆☆☆	☆☆½	☆☆½	☆☆½	☆☆	☆☆☆☆	☆☆½	☆☆½	★★★★
NEC UltraLite SX/20	727	☆☆	☆☆☆	☆☆	☆☆½	☆☆½	☆☆	☆☆☆	☆☆½	★★½
Panasonic CF-370H6	728	☆☆½	☆☆½	☆☆½	☆☆½	☆☆½	☆☆	☆☆☆	☆☆☆	★★★★
Phillips Magnavox Metalls SX.20	729	☆☆½	☆☆☆	☆☆☆	☆☆☆☆	☆☆½	☆	☆☆☆	☆☆½	★★★★
Samsung NoteMaster 386S/20	730	☆☆☆	☆☆½	☆☆☆	☆☆½	☆☆	☆☆½	☆☆☆☆	☆☆½	★★★★
Tangent 320N	731	☆☆☆☆	☆☆	☆☆☆	☆☆☆☆	☆☆½	☆☆½	☆☆½	☆☆½	★★★★½
TI TravelMate 3000 Win5X	732	★★★★	★★★★	★★½	★★★★	★★★	★★½	★★★★	★★★	★★★★
Toshiba T2200SX	733	☆☆☆☆	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆½	½	☆☆☆☆	☆☆☆	★★★★½
ZDS MastersPort 386SL	734	☆☆½	☆☆☆☆	☆☆☆☆	☆☆½	☆☆☆☆	½	☆☆½	☆☆☆☆	★★★★½
ZDS MastersPort 386SX	764	☆☆½	☆☆☆	☆☆½	☆☆½	☆☆☆	☆☆	☆☆½	☆☆☆☆	★★★★½
Zeos 80386SX-20	735	☆☆	☆☆	☆☆	☆☆☆	☆☆½	☆☆	☆☆½	☆☆☆	★★½

Overall value is produced by multiplying each category rating by its weight percentage, summing the results, and grading on a curve to the nearest half number.
 *Could not complete performance tests.

Micro Express 386 SX/20

PROS: Very low price, fine service and support

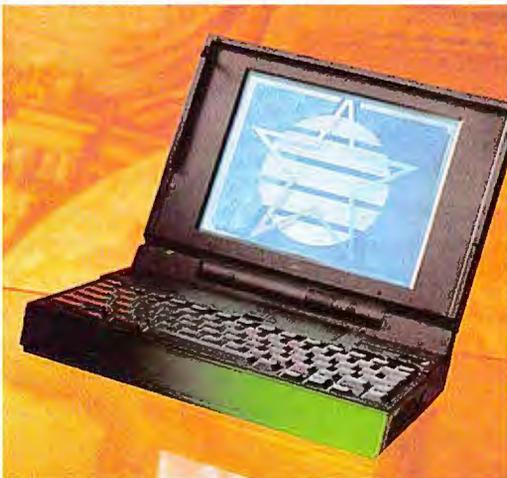
CONS: Fairly slow, small hard-to-read screen, confusing keyboard layout

When you're hunting for a bargain, trade-offs are a fact of life. The question is, how bad are they? At \$2513 the good-looking SX/20 is one of the most inexpensive notebooks you can find, and it comes with excellent support. Now you start subtracting. At 9.1 pounds traveling weight, it's a tad heavy, and 232 cubic inches is a bit bulky. The battery life (2:42 with power saving off) is unimpressive but far from the worst.

So far, so tolerable. But then you notice the SX/20 is fourth slowest overall, despite decent *Windows* scores, and its screen is small and lacks good contrast. You can't suspend *Windows* safely, and the manual is sloppy and poorly organized. The keyboard needs work too: Cursor key layout is nonstandard, and page keys are emulated. Thanks to the low price, the 386 SX/20 rises above its flaws, but Blackship's 386SX/20 NB is faster, lighter, smaller, has a bigger screen—and costs \$269 less.



Bargain alert! This sleek \$2513 gem from Micro Express is a good deal despite the relatively slow performance.



The UltraLite is neither light nor ultrafast. But the unit's built-in SCSI port is perfect for a CD ROM drive.

NEC UltraLite SX/20

PROS: SCSI port, big screen

CONS: Slowest in roundup, heavy, large

If you need to connect with a CD ROM drive on the road, you'll appreciate the UltraLite SX/20's built-in SCSI port. This \$3521 system also boasts a big screen with good dark characters, although the display on our test unit suffered from uneven backlighting. You can install 10MB of CPU-speed RAM—handy for *Windows*, which is included free.

Just don't expect speed. This notebook was the slowest overall of the units we tested. Nor do the UltraLite's 10.4-pound traveling weight (heaviest in the roundup, thanks to a huge AC power transformer) and bulky box justify its name. Also disappointing is the 1:51 battery life, but good power-saving options (including a *Windows*-safe S/R) give you over 5 hours. Still, the combination of SCSI port and gorgeous display makes this a good choice for traveling multimedia presentations—especially if NEC makes good on its promise of a new, lighter transformer.

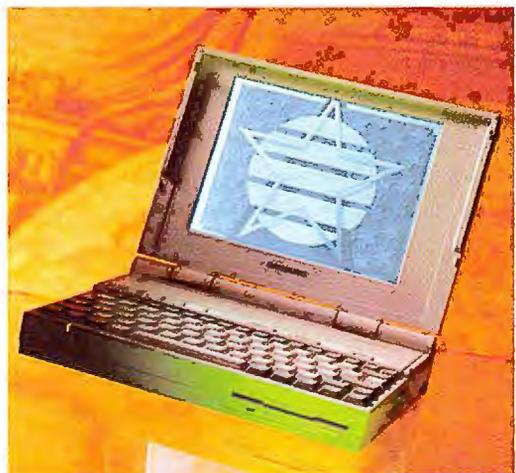
Panasonic CF-370H6

PROS: Light, good keyboard, nice design

CONS: Fairly slow, small screen

The nicely designed Panasonic CF-370H6 has a lot to like: It's light (8.1 pounds traveling weight); and though full-bore battery life is just over 2 hours, enabling all the power-saving features gives you almost 7 hours—the third-best score. The CF-370H6 also boasts a fumble-free, three-position brightness switch, a solidly made inset screen hinge, and a good keyboard with an intelligent layout.

That's the good news. The bad news includes a fairly high \$3742 price and slow performance on all but the *Windows* tests. The screen ties for smallest in the roundup, and it's so wide it distorts graphics. There's a suspend/resume function, but it doesn't get a special button; the on-off switch doubles as the S/R control, and it doesn't work well with *Windows*. But if you need a lightweight notebook with long battery life, the CF-370H6 makes a reasonable choice.



The screen can distort graphics, but travelers will love the light weight and 6-hour-plus computing sessions.

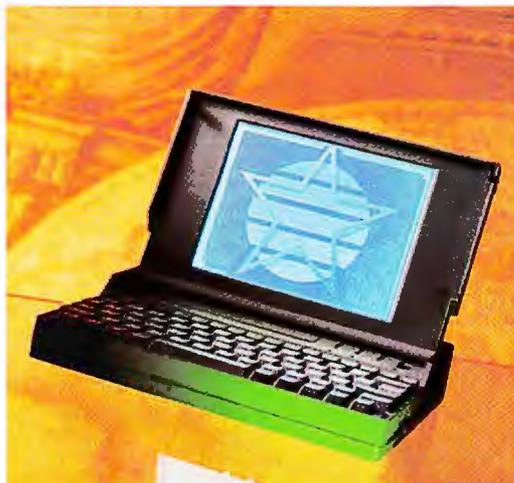
Philips Magnavox Metalis SX.20

PROS: Small, long battery life

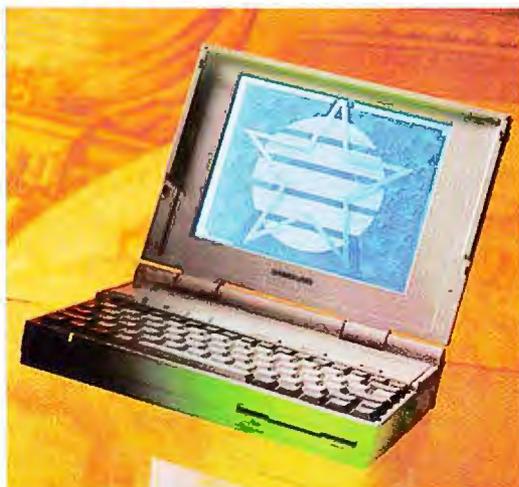
CONS: Expensive, small screen

Philips's Magnavox Metalis SX.20 is one heavy metal monster, from its 9.3-pound traveling weight to its \$3899 price tag, but its slim, trim case keeps its portability rating high. Moreover, a lot of the weight is due to powerful batteries. The Magnavox Metalis demonstrates impressive staying power away from the AC plug: nearly 3 hours with power-saving features off and over 5 hours in the power-saving trade-off mode.

The screen is fairly small, but the display and contrast are so sharp you can work for hours without reaching for the Visine. Because the Metalis is hinged several inches in, you won't have any trouble working on a tray table. Also, you use special keys to adjust brightness and contrast instead of having to fumble with wheels, knobs, or slides. The keyboard touch is fine, but page keys are emulated. If plenty of battery power in a tiny package sounds good, the Metalis fills the bill.



If 3- to 5-hour battery life and a crisp screen sound good to you, you'll find the Metalis SX.20 well worth the high price.



The NoteMaster bundles Windows, and its superb big screen is the perfect display for Windows on the road.

Samsung NoteMaster 386S/20

PROS: Big sharp screen, Windows included

CONS: Heavy, awkward keyboard layout, limited power-saving features

Samsung's cream-colored NoteMaster 386S/20 delivers middle-of-the-road performance at a middlin' price. But before you start yawning, check out its superb four-star display. Not only is the screen one of the biggest and brightest in the roundup, for once there's no compromise: It offers exceptionally sharp images and high contrast. The battery delivers almost 3 hours of life with power-saving features off, but even with them enabled, all you get is 3½ hours. And though the system comes bundled with *Windows*, the sleep mode may cause it to crash.

The NoteMaster is heavier than average (9.4 pounds traveling weight), and getting used to the keyboard takes a while: Its cursor key layout is nonstandard, and you have to press the <Fn> key to turn the cursor keys into page keys. But despite its limitations, the top-notch screen makes the NoteMaster a capable presentation machine.

Tangent 320N

PROS: Very low price, extremely light, good keyboard

CONS: Small screen, very short battery life, S/R not safe for Windows

The model number of the Tangent 320N is the same as the unit we reviewed last November, but this is an entirely new machine, made by a different Taiwanese OEM. At 7.7 pounds the 320N is one of the lightest notebooks in the roundup, and its \$2615 price is deliciously low. Performance is ho-hum except for *Windows*, where the Tangent shines with a fast, fourth-place finish. The 320N boasts a fine keyboard layout with all the important keys dedicated, and though the 320N's screen ties for the smallest in the roundup, it's sharp and easy on the eyes.

As with the Librex, you pay for the light weight with abysmal battery life: only 1:18 with power saving off and 2:28 with it on. Nor is it safe to use sleep mode with *Windows*. And the dinky manual reads like it was dashed off over the weekend. But if you don't need long battery life and like your *Windows* fast and sassy, the 320N is a superb value.



If you rarely stray from a power outlet, the low-cost, lightweight Tangent may prove an irresistible bargain.

Why So Many Communications Users Can't Fit Into Their Software.



It seems like no one fits into their comm software anymore. Your company's power users can't squeeze into programs that scrimp on high-performance features. Yet, your casual modem users and laptop users can't afford to be swamped by scores of power features they don't need.

To make matters worse, if everyone brings in their own comm software, PC anarchy breaks out and then nothing fits! You're left with a tangle of incompatible packages from the sloppiest shareware to the most sophisticated software. You can't share scripts. Can't share support and training. Can't easily share much of anything!

What you *can* do is take a closer look at the Crosstalk™ family of products.

Crossing The Communications Gap.

Crosstalk Mk.4 and Crosstalk Communicator not only let you fit the right software to the right users, but both comm programs actually work as a team. Since the two programs share the same code base and menu system, users can easily move from one to the other. Training and support are simplified. And complex scripts can be written on one, yet run on the other.

With both packages, you get the engineering excellence for which Crosstalk is famous—and the kind of support and back-up that only come from a company like DCA®.

“If you develop scripts in Mk.4 but your coworker prefers the easier-to-use Crosstalk Communicator, that's fine. You can use the same scripts with Communicator.”
—PC Magazine

The Most Fitting Solutions.

Crosstalk Mk.4 is the ultimate comm software for power users. When the editors of *PC Magazine* chose it as the top performer among all comm packages for 1991, they called it, “A top-notch program that does almost everything and does it all right...” It has the CASL™ scripting language (a powerful programming language like C or Pascal) for automating communications. Plus, highly specialized capabilities from VT™ emulators and ZMODEM to FTTERM and IND\$FILE. Data transmission rates up to 115,200bps. Multiple sessions. And modem sharing on LANs.

Crosstalk Communicator is the favorite of executives and laptop users.



It's simple enough to configure and begin communicating in three minutes, yet includes so many of the same popular features as Crosstalk Mk.4 that *InfoWorld* called it “an exceptional value...anything but stripped down.”

Individually, Crosstalk Mk.4 and Communicator perform so well that *PCWorld* gave both products the “Best Buy” award in their respective categories.

Together, they provide an unbeatable solution that can be tailor-made to your users and budget.

Avoid Nightmares Like The Great Crash Of '91.

Some say it's worth specifying Crosstalk for the reliability alone. Remember April of '91 and the popular comm package that crashed repeatedly when *PC Magazine* attempted high-speed file transfers? Crosstalk was the benchmark for those very same tests.

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April 1991
Crosstalk Communicator



April 1991
Crosstalk Mk.4



April 30, 1991
Crosstalk Mk.4
Version 2.0



Vol. 7 No. 12 1990
Crosstalk Mk.4

Circle 84 on reader service card

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Circle 61 on reader service card

More 20-MHz SX and SL Notebooks: Best of the Rest

The flood of 20-MHz SX/SL notebooks is rising—and your choices are better by the day. Here are 25 more.

Model	Price ¹	Size (inches)	RAM capacity (MB)	Hard disk (MB)	Warranty (months)
ALRVIP M	\$3495	11.8x8.8x2.3	16	40	12
ALRVIP SL	\$3495	11.8x8.8x2.3	16	40	12
Chaplet NBC386SL	\$3314	11.3x8.5x1.5	8	60	12
Commax NB386sl	\$3495	11x8.5x1.5	8	60	12
Commax Ultrathin	\$3195	11x8.5x1.4	4	60	12
CompuAdd 320nx	\$2724 ²	11x8.5x2.1	6	60	12
Copam NB 386SXL/20	\$2799	11x8.6x1.5	4	40	12
Core Pacific NB386sx/20	\$1635	11x9.3x1.9	16	60	12
Dataworld NB325 SXL	\$2445	11x8.5x2	16	60	12
Dataworld NB320 SL	\$2645	11x8.5x2	16	60	12
Dauphin 1000 Lapbook	\$3254	12.5x11.3x2.3	32	60	12
Dell System NX20	\$2787	11x8.3x2	6	40	12
Everex Tempo Carrier	\$3294	11x8.5x1.5	8	40	12
GoldStar GS 620	\$2795 ²	11x8.5x2	4	40	12
Grid 1755	\$4350 ²	12.2x10x1.7	8	80	12
Hyundai Super-NB386S	\$3173 ²	11x8.5x2	8	40	18
IBM PS/2 Model L40 SX	\$4943 ²	12.8x10.7x2.1	18	60	12
Mitac 3026E	\$2395	11.2x9.2x2	6	60	12
Mitac 3027E	\$2895	11.2x9.2x2	16	60	12
Mitsuba Ninja 386SX 20-MHz Notebook	\$2699	11x8.5x2	8	60	12
Olivetti Notebook S20	\$5155 ²	11.7x8.26x2	6	60	12
Packard Bell PB386SXNB	\$2200 ³	11x8.7x1.9	8	40	12
Sharp PC-6340	\$2699	11x8.5x1.4	8	40	12
Tandon NB/386SX	\$4449 ²	11x8.7x2.1	16	60	12
Tandy 3820 HD	\$3599	12.2x10x1.7	8	60	12

¹ Price based on 4MB to 5MB RAM, 40MB to 60MB hard disk, 2400-baud internal or external modem, at least one 1.44MB 3½-inch floppy drive, at least one parallel and one serial port, and DOS 3.31 or later version.
² With 2MB RAM.
³ Estimated street price; list price unavailable.

For more information about all products in this sidebar, circle readerservice no. 912.

WHERE TO BUY

ALR
 800/444-4257, 714/581-9240 (fax)
 Reader service no. 736

Copam USA
 800/828-4200, 510/623-8551 (fax)
 Reader service no. 740

Dell Computer Corp.
 800/289-3355, 800/727-8320 (fax)
 Reader service no. 744

9200, 408/473-9279 (fax)
 Reader service no. 748

Olivetti Office USA
 908/526-8200, 908/526-8405 (fax)
 Reader service no. 752

Chaplet Systems USA
 408/732-7950, 408/732-6050 (fax)
 Reader service no. 737

Core Pacific
 908/704-8383, 908/704-8387 (fax)
 Reader service no. 741

Everex Systems
 800/821-0806, 415/683-4520 (fax)
 Reader service no. 745

IBM
 800/426-9292
 Reader service no. 749

Packard Bell Electronics
 818/886-2098, 818/773-9558 (fax)
 Reader service no. 753

Commax Technologies
 800/526-6629, 408/435-5000
 Reader service no. 738

Dataworld
 800/736-3282, 310/695-7016 (fax)
 Reader service no. 742

Goldstar Technology
 408/432-1331, 408/954-1143 (fax)
 Reader service no. 746

American Mitac Corp.
 800/648-2287, 408/432-8519 (fax)
 Reader service no. 750

Sharp Electronics Corp.
 800/237-4277, 201/529-9637 (fax)
 Reader service no. 754

CompuAdd Corp.
 800/456-3116, 512/331-6236 (fax)
 Reader service no. 739

Dauphin Technology
 708/627-4004, 708/627-7618 (fax)
 Reader service no. 743

Grid Systems Corp.
 800/222-4743
 Reader service no. 747

Mitsuba Corp.
 800/648-7822, 714/392-2000
 Reader service no. 751

Tandon Corp.
 800/800-8850, 805/523-0340, 805/529-8408 (fax)
 Reader service no. 755

Hyundai Electronics America
 800/727-6972, 408/473-

Tandy Corp.
 817/390-3011
 Reader service no. 756

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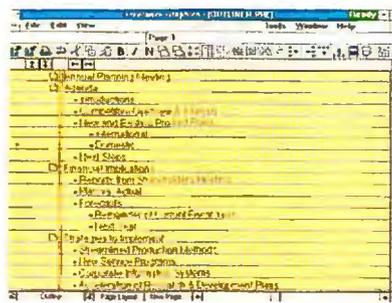
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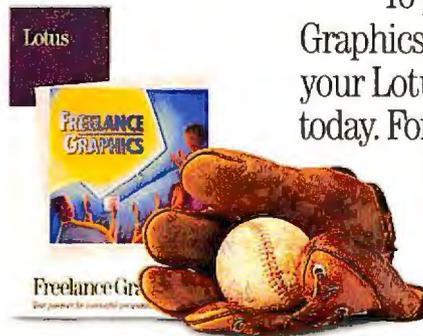
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TI TravelMate 3000 WinSX

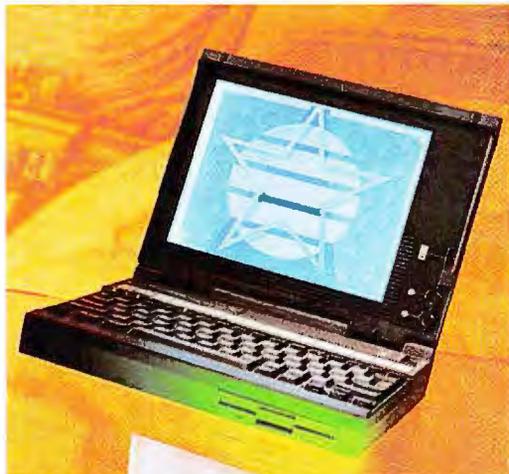
PROS: Fast, extremely light, very small, huge screen

CONS: 6MB RAM ceiling, short battery life with power saving disabled

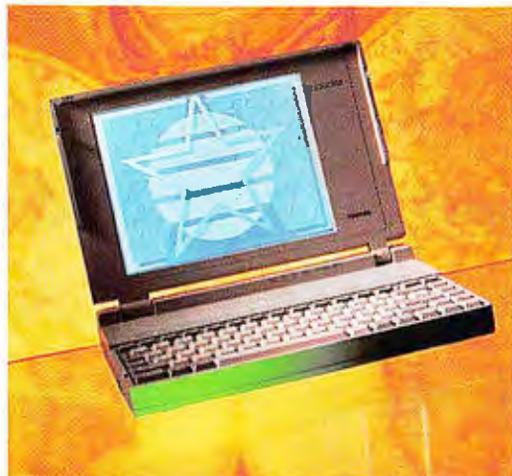


The \$3084 WinSX is designed for *Windows* every step of the way, yet it's a Best Buy for just about everyone. The WinSX is a serious speedster, and not just on *Windows*—it took fourth place overall. Not only is *Windows* preinstalled, its parameters have been optimized for the system's special BIOS and high-speed video system—and the WinSX's S/R is guaranteed to keep it happy. Two more pluses for *Windows* devotees are a TravelPoint, thumb-operated trackball that mounts on the side of the machine, and a superb screen that ties for biggest in the roundup.

The TI's battery score (4:15 with power saving) is impressive considering the low 7.4-pound traveling weight. The WinSX uses patented power-saving software to slow the CPU between keystrokes. The WinSX is a compelling value; for *Windows* fanatics, it's irresistible.



This lightweight speedster with the gorgeous big display is our only Best Buy; it's particularly well suited to *Windows*.



Good things come in 7-pound packages—especially this 3- to 6-hour Toshiba. But \$4441 is a bit rich for our blood.

Toshiba T2200SX

PROS: Extremely portable, great battery life, big screen, fine keyboard

CONS: Very expensive

Like Dell's 320N+, Toshiba's impressive T2200SX features nickel-hydride batteries—they charge in only 1 hour and last about a third longer than nickel-cadmium cells. Thus, while the T2200SX is the smallest notebook in our roundup—and, at 7 pounds traveling weight, the second lightest—it delivers amazing battery life: over 3 hours with power saving defeated and close to 6 hours in its lean, mean mode.

Despite its trim size, the T2200SX has one of the biggest and best-looking screens in this review. It also sports an excellent keyboard, and performance is respectable. If the system goes into auto-sleep while you're running *Windows*, Toshiba promises that it will still be working when you wake it up. So why doesn't the T2200SX rate four stars? A \$4441 price tag, that's why. And that's the only thing standing between this outstanding machine and a Best Buy.

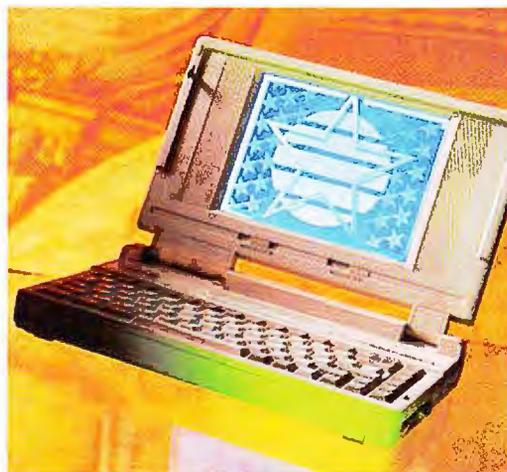
ZDS MastersPort 386SL

PROS: Fastest in roundup, light, small, 8 hours power-saving life, superb keyboard

CONS: Very expensive, small screen

This is the first SL notebook to reach the market, and it's a dazzler. Battery life in full-use mode is a mediocre 2:09, but turn on the *Windows*-proof power-saving features and you get a stupendous 8:22. Furthermore, thanks to the SL chip's built-in cache controller, and 64K of external cache memory, the MastersPort took top performance honors in almost every benchmark. It's also one of the smallest notebooks here, and it weighs in with an airy 8.4 pounds traveling weight. The keyboard is perfect, with a flawless layout and a nice touch.

The bad news? The display is small and a bit dark. And the price—\$4478—is stratospheric. But considering what you get, this is still one of the best values in the roundup. (At press time, Zenith Data Systems discontinued this unit in favor of a 25-MHz version—so expect to pay a little more for even faster performance.)



This lone SL machine earns second-place honors with the fastest performance and best power saving in the roundup.



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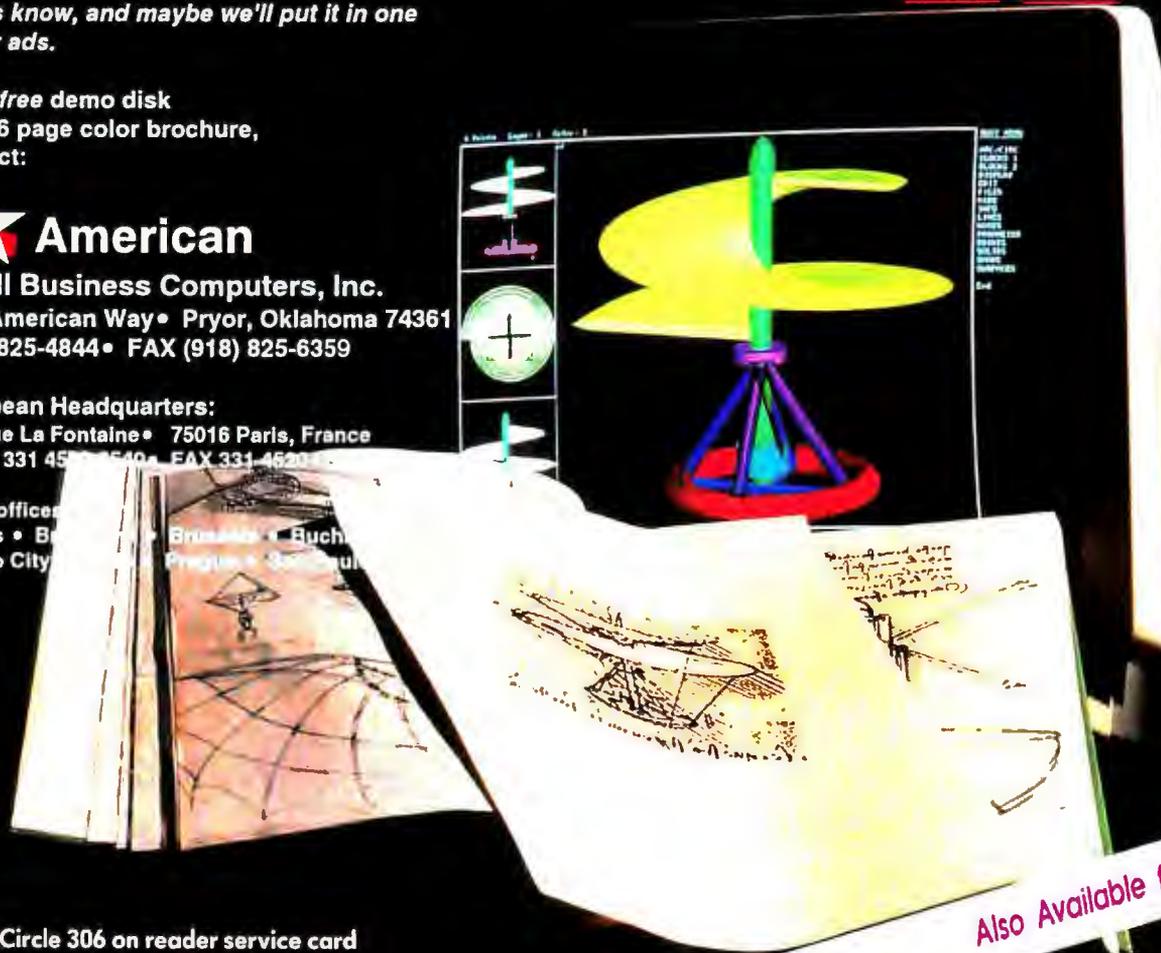
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Circle 306 on reader service card

Also Available for Macintosh

ZDS MastersPort 386SX

PROS: Fast, small, super service and support

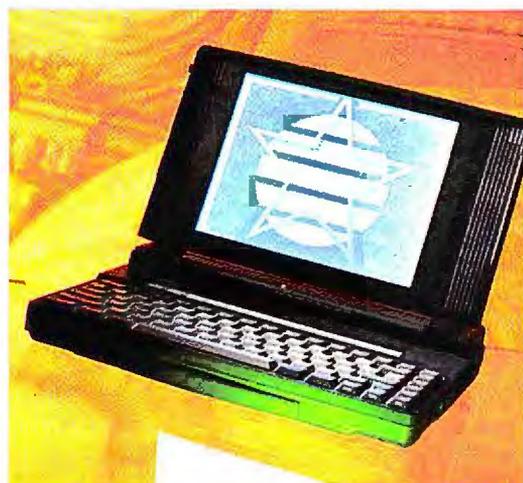
CONS: 4MB RAM capacity, can't suspend Windows safely

Even though ZDS is now in the SL business, there's no indication its popular MastersPort 386SX is going away. And that's good news, because this solid system delivers real value—for about \$750 less. (The buy-in is still steep, however, at \$3732.) While this 8.7-pound unit isn't quite as fast as its SL-based sibling, it's still one of the swiftest machines we tested. It can't match the SL's breathtaking battery life, but it still gives you almost 7 hours with power saving enabled.

The 386SX's profile is trim, and its large screen is sharp and crisp. Brightness and contrast controls are quite easy to adjust. The keyboard lacks dedicated page keys, but its excellent touch makes up for the inconvenience—and special keys provide access to setup and display choices. Despite its slightly cramped 4MB RAM capacity, this portable speedster is one of the best SX notebooks you can buy.



Next to its stunning SL sibling, it's easy to overlook this modest SX's strong performance, small size, and solid design.



You'll like the big screen and fine keyboard but not the slow performance and limited power-saving skills.

Zeos 80386SX-20

PROS: Large screen, good keyboard

CONS: Very slow, bulky, heavy

Zeos's 80386SX-20 is not only underwhelming—at \$3395 it's somewhat overpriced as well. Its overall performance ranks next to last in the roundup, battery life is mediocre, and there's no suspend/resume or auto-sleep function. At 9 pounds traveling weight, it's one of the heavier notebooks we looked at, and it's the second bulkiest in the batch.

The Zeos sports a large screen, but the washed-out display makes it a bit hard to read—and the brightness and contrast controls are tiny wheels on the right of the case, where they are far too easy to disturb. Warranty and tech support are fairly good, but there's no on-site service and no turnaround guarantee. There's got to be a bright side, right? Well, the keyboard is quite good, and the screen hinge is inset a full 3 inches to provide a good working angle. But looking at the big picture, the Zeos is outmatched. ●

WHERE TO BUY

AcerAnyWare 1120NX

Acer America Corp.
2641 Orchard Pkwy.
San Jose, CA 95134
800/733-2237
LIST PRICE: 5MB RAM,
1.44MB floppy, 60MB
hard disk, 2400-baud
fax-modem, AC
adapter, carrying case,
DOS 5.0 \$4853
ACCESSORIES: 2MB
RAM \$379, additional
battery \$129, expansion
chassis \$599
Reader service no. 714

ALR Venture 386SX/20

Advanced Logic
Research, Inc.
9401 Jeronimo
Irvine, CA 92718
800/444-4257,
714/581-9240 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, AC adapter,
carrying case, DOS 5.0
\$3495
ACCESSORIES: 4MB

RAM \$899, pocket fax-
modem \$695, 80MB
hard disk \$400

Reader service no. 715

Altima LSX

Altima Systems, Inc.
1390 Willow Pass Rd.
#1050
Concord, CA 94520
800/356-9990,
510/356-2408 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, 2400-baud
fax-modem, AC
adapter, carrying case,

DOS 5.0, WordStar Lap-
top Collection \$3699
ACCESSORIES: 2MB
RAM \$349, 80387SX
math coprocessor \$199,
additional battery \$99
Reader service no. 716

AST Premium Exec 386SX/20

AST Research Inc.
16215 Alton Pkwy.
P.O. Box 19658
Irvine, CA 92713-9658
800/727-4278,
714/727-9355 (fax)
LIST PRICE: 4MB RAM,

1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS 5.0
\$3943
ACCESSORIES: 2MB
RAM \$338, additional
battery \$99
Reader service no. 717

AT&T Safari NSX/20

AT&T
14K Worlds Fair Dr.
Somerset, NJ 08873
800/247-1212,

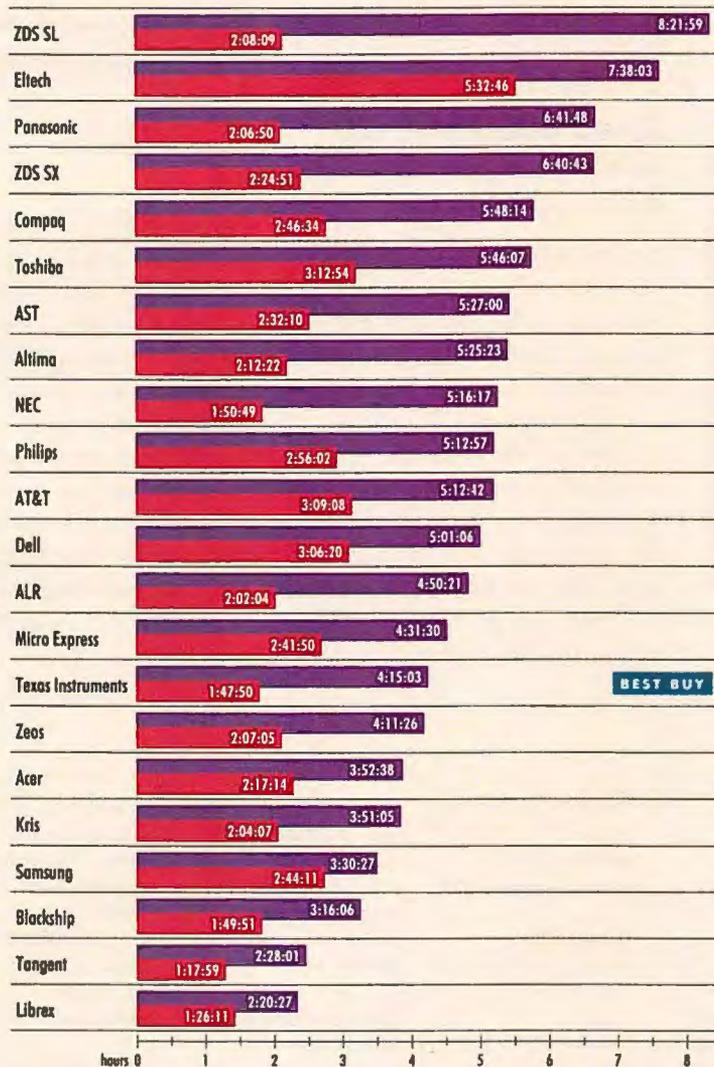
PC WORLD TEST REPORT

Power-Saving Tricks Add Hours to Battery Sessions

Most notebooks can make batteries last more than twice their normal duration, but the lone SL in the roundup, from Zenith Data Systems, can almost quadruple the length of battery sessions. Eltech's apparently high scores with power-saving features disabled are due to built-in power-saving features that you can't turn off.

BATTERY LIFE WITH POWER-SAVING FEATURES ON

BATTERY LIFE WITH POWER-SAVING FEATURES OFF



Methodology

We run an application with built-in pauses of fixed duration. We run one set of tests with the notebook's power-saving features disabled or set to minimum (power-saving features off). We then run the same set of tests with each notebook's power-saving features enabled and set to maximum (power-saving features on).

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

WHERE TO BUY

908/469-4578 (fax)
 LIST PRICE: 4MB RAM, 1.44MB floppy, 40MB hard disk, 2400-baud modem, mouse, two batteries, AC adapter, carrying case, DOS 4.01, Windows 3.0, communications software \$5228
 ACCESSORIES: 2MB RAM \$479, additional battery \$129, auto adapter \$129
Reader service no. 718

Blackship 386SX/20 NB

Blackship Computer Systems, Inc.
 2031 O'Toole Ave.
 San Jose, CA 95131
 800/531-7447, 408/432-1443 (fax)
 LIST PRICE: 4MB RAM, 1.44MB floppy, 40MB hard disk, 2400-baud pocket modem, AC adapter, carrying case, DOS 5.0 \$2244
 ACCESSORIES: 2MB RAM \$250, pocket 9600-baud fax/2400-baud modem \$350, expansion chassis \$350
Reader service no. 719

Compaq LTE 386s/20

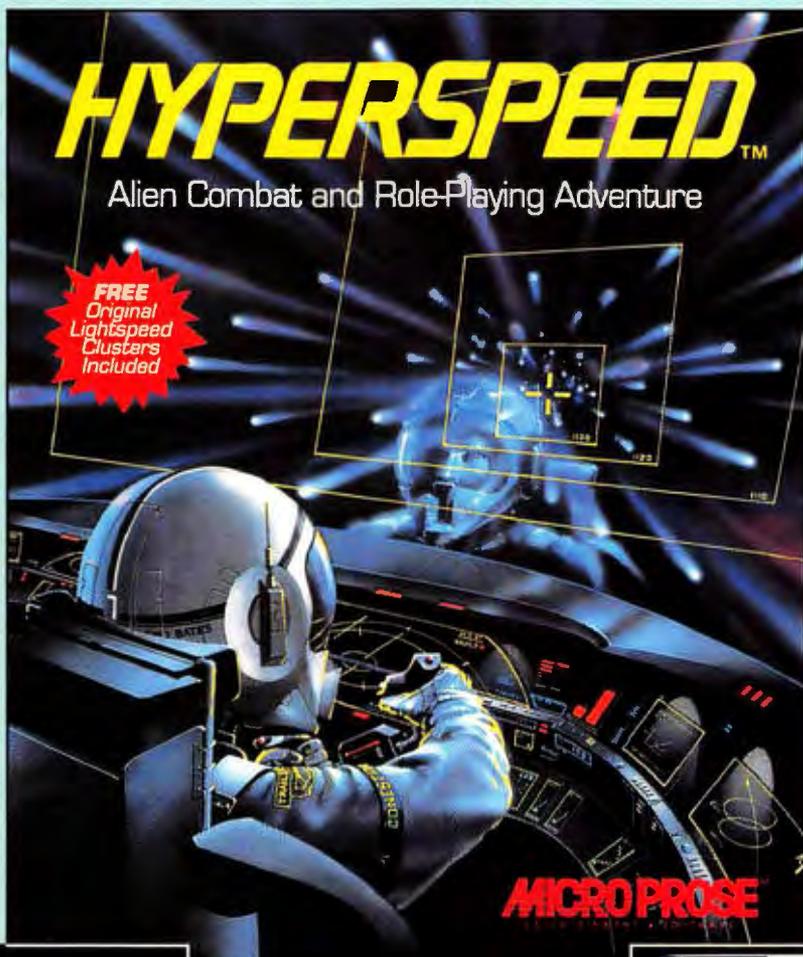
Compaq Computer Corp.
 P.O. Box 692000
 Houston, TX 77269-2000
 800/231-0900, 800/345-1518
 LIST PRICE: 4MB RAM, 1.44MB floppy, 60MB hard disk, enhanced 2400-baud internal modem, AC adapter, carrying case, DOS 4.01 \$5955
 ACCESSORIES: 4MB RAM \$1499, additional battery \$169, desktop expansion base \$999
Reader service no. 720

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IBM-PC screens shown.



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For IBM-PC/Tandy/compatibles. For the latest information on release dates and availabilities, call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. © 1991 MicroProse Software, Inc., 180 Lakefront Drive, Hunt Valley, MD 21030.

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WHERE TO BUY

Dell System 320N+
Dell Computer Corp.
9505 Arboretum Blvd.
Austin, TX 78759-7299
800/289-3355,
800/727-8320 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, 2400-baud
internal modem, AC
adapter, carrying case,
DOS 5.0 \$3798
ACCESSORIES: 2MB
RAM \$249, additional
battery \$169, 80MB
hard disk \$300
Reader service no. 721

Eltech 3026E
Eltech Research, Inc.
47266 Benicia St.
Fremont, CA 94538
510/438-0990,
510/438-0663 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, 2400-baud
pocket modem, AC
adapter, carrying case,
DOS 5.0, Windows 3.0
\$2349
ACCESSORIES: 2MB
RAM \$150, additional
battery \$48, pocket
ethernet adapter \$360,
expansion chassis
\$350
Reader service no. 722

Fora NBS 386S/20
Fora Inc.
3096 Orchard Dr.
San Jose, CA 95134
408/944-0393,
408/944-0392 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, 2400-baud
internal modem, AC
adapter, carrying case,
DOS 5.0 \$3140
ACCESSORIES: 4MB
RAM \$350, additional
battery \$75, external
1.2MB floppy \$295
Reader service no. 723

Kris Master
Kris Technologies
260 E. Grand Ave.
South San Francisco,

CA 94080
800/282-5747,
415/877-8048 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal fax-
modem, AC adapter,
carrying case, DOS
5.0, Windows 3.0
\$2650
ACCESSORIES: 85MB
hard disk upgrade
\$225, additional bat-
tery \$59, expansion
chassis \$349
Reader service no. 724

Librex 386SX/20
Librex Computer Sys-
tems, Inc.
1731 Technology Dr.
San Jose, CA 95110
800/248-4880,
408/441-7842 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal fax-
modem, AC adapter,
carrying case, DOS 5.0
\$4028
ACCESSORIES: addi-
tional battery \$59, auto
adapter \$99
Reader service no. 725

**Micro Express 386
SX/20**
Micro Express
1801 Carnegie Ave.
Santa Ana, CA 92705
800/989-9900,
714/852-1400,
714/852-1225 (fax)
LIST PRICE: 5MB RAM,
1.44MB floppy, 40MB
hard disk, internal fax-
modem, AC adapter,
carrying case, DOS 5.0
\$2535
ACCESSORIES: addi-
tional battery \$100
Reader service no. 726

NEC UltraLite SX/20
NEC Technologies, Inc.
1414 Massachusetts
Ave.
Boxborough, MA
01719
800/366-3632,
508/264-8000 (fax)
LIST PRICE: 4MB RAM,

1.44MB floppy, 40MB
hard disk, internal
modem, AC adapter,
carrying case, DOS
5.0, Windows 3.0
\$4333
ACCESSORIES: 2MB
RAM \$399, additional
battery \$99
Reader service no. 727

**Panasonic CF-
370H6**
Panasonic Communi-
cations and Systems
Co.
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086,
201/348-7000
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS 5.0
\$4515
ACCESSORIES: 1MB
RAM \$179, additional
battery \$79
Reader service no. 728

**Philips Magnavox
Metalis SX.20**
Philips Consumer Elec-
tronics Co.
One Philips Dr.
P.O. Box 14810
Knoxville, TN 37914-
1810
800/722-6224,
310/217-1883 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal fax-
modem, AC adapter,
carrying case, DOS
4.01 \$4299
ACCESSORIES: 4MB
RAM \$800, additional
battery \$100, expan-
sion chassis \$699
Reader service no. 729

**Samsung NoteMas-
ter 386S/20**
Samsung Information
Systems America, Inc.
3655 N. First St.
San Jose, CA 95134-
1713
800/624-8999 ext.
851, 408/434-

5653 (fax)
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS
5.0, Windows 3.0
\$3087
ACCESSORIES: 4MB
RAM \$349, additional
battery \$99
Reader service no. 730

Tangent 320N
Tangent Computer Inc.
197 Airport Blvd.
Burlingame, CA 94010
800/223-6677,
415/342-9380 (fax)
LIST PRICE: 5MB RAM,
1.44MB floppy, 40MB
hard disk, internal
modem, AC adapter,
auto adapter, DOS 5.0
\$3095
ACCESSORIES: 2MB
RAM \$200, additional
battery \$175, five-slot
expansion chassis
\$595, carrying case
\$69
Reader service no. 731

**TI TravelMate 3000
WinSX**
Texas Instruments Inc.
P.O. Box 202230
Austin, TX 78720-2230
800/527-3500
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS
5.0, Windows 3.0
\$3867
ACCESSORIES: 2MB
RAM \$299, additional
battery \$99, expansion
chassis \$999, Travel-
Point trackball \$99
Reader service no. 732

Toshiba T2200SX
Toshiba America Infor-
mation Systems
9740 Irvine Blvd.
Irvine, CA 92713-9724
800/334-3445
LIST PRICE: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal

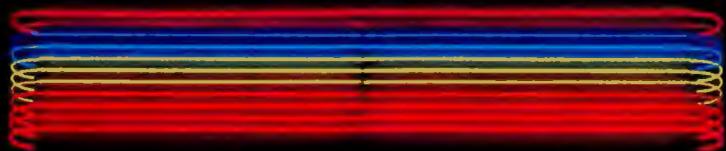
modem, AC adapter,
DOS \$4778
ACCESSORIES: 2MB
RAM \$479, additional
battery \$199, expan-
sion chassis \$999,
carrying case \$79
Reader service no. 733

**ZDS MastersPort
386SL, ZDS Master-
sPort 386SX**
Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL
60089
800/553-0331
LIST PRICE: MastersPort
386SL: 4MB RAM,
1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS
5.0, Windows 3.0
\$5336
MastersPort 386SX:
4MB RAM, 1.44MB
floppy, 60MB hard
disk, internal modem,
AC adapter, DOS 4.01
\$4136
ACCESSORIES: 2MB
RAM \$399, additional
battery \$115
Reader service no. 734

Zeos 80386SX-20
Zeos Int'l, Ltd.
530 Fifth Ave. NW
St. Paul, MN 55112
800/423-5891,
612/633-1325 (fax)
LIST PRICE: 5MB RAM,
1.44MB floppy, 60MB
hard disk, internal
modem, AC adapter,
carrying case, DOS 5.0
\$3395
ACCESSORIES: 2MB
RAM \$199, additional
battery \$89, external
1.2MB floppy \$279
Reader service no. 735



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GATEWAY 2000 - IT'S



286 Systems
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386 SX Systems
GATEWAY 2000 386 SX/20



For the first time in the six-year history of *Computer Shopper* magazine's Best Buy competition, one company swept all of the awards in the desktop PC categories. At COMDEX/Fall '91 in Las Vegas, Gateway 2000 was awarded Best Buy honors for 286, 386SX, 386 and 486 systems.

"What's most meaningful about these awards," said Gateway 2000 President Ted Waitt, "is they are given by the readers of *Computer Shopper*, people who are buying and using PCs in the real world."

Our thanks to Gateway's own Semi-Gold Dancers played by employees from departments throughout the company.

Shopper readers voted in record numbers: 15,000 people cast over 100,000 votes for

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products in 27 hardware and software categories. The vote on desktop PCs was a decisive victory for the Midwestern firm customers call the "cow company."

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- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey™ Keyboard
- MS DOS® 5.0



\$1345

16 MHZ 386SX

- Intel® 80386SX Processor
- 2MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 40MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft® Mouse
- MS DOS 5.0
- MS Windows™ 3.0

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- 4MB RAM
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- 1.44MB 3.5" Drive
- 80MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



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25 MHZ 386

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- 1.44MB 3.5" Drive
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- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

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- 4MB RAM
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- 1.44MB 3.5" Drive
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- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



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33 MHZ 486

- Intel 80486 Processor
- 64K Cache RAM
- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 200MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0



\$2945

33 MHZ 486 EISA

- Intel 80486 Processor
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- 8MB RAM
- 1.2MB 5.25" Drive
- 1.44MB 3.5" Drive
- 340MB 15ms SCSI Drive with 128K Multi-Segmented Cache
- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

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Remote
Communications
Software

The Next Best Thing

Need a file from the office PC while you're at home? Want to query the company data base when you're on the road? With one of these seven remote programs, two modem-equipped PCs can act as one. **Judy Heim**



YOU'RE SITTING AT HOME on a Sunday night working on a report due the next day, when you realize that you left a crucial worksheet at the office. You could waste an hour or so driving

on the freeway or wake up in the wee hours to hit the office early. But if you had a remote communications package, you could dial in with a modem and pick up the file on the spot. And while you were at it, you could load your office scheduling program to check the next day's appointments.

With some of the latest remote programs, such as our Best Buy from Norton-Lambert—Close-Up—you can even use your home 286 to run enhanced-mode Windows on your office 386. You'll need a 9600-baud modem for reasonable Windows performance, but with high-speed models priced as low as \$400 these days, this hurdle is no longer a major one.

If you travel with a laptop or notebook, a remote package can bring your office PC right into your hotel room, giving you access to data and programs that could never fit on your laptop. Even if your laptop hard disk is big enough, this arrangement lets you avoid the confusion of keeping dual sets of programs and files.

If training or supporting employees

is part of your job, you can use a remote package to "sit" at the same computer and show them how to fix problems rather than having to visualize descriptions over the phone. Everyone from architects to financial analysts to screenwriters can use remote packages to collaborate with partners in distant cities, examining and editing the same file while "talking" to each other through a pop-up chat window.

You can also use remote packages for file transferring, and most offer limited terminal features for dialing into a BBS or on-line service. No remote program delivers the communications savvy of a Procomm Plus, and if you need to call in only to pick up files, Procomm and other standard communications packages offer simple

EXECUTIVE SUMMARY

Close-Up Wins Remote Honors

Close-Up is fast, easy to use, and reliable. What else do you need in a remote package?



Close-Up Dual Pack 4.0 earns its Best Buy by virtue of lightning speed, an easy interface, reliable error handling, and a complete set of tools for controlling one computer from another and collaborating with a partner. It's also the only package that can run Windows reliably from afar—even in extended mode. Runner-up **Remote2** isn't quite as fast, and its toolbox is smaller, but it is perfectly dependable with graphics.

Key Buying Issues: Percentage of Importance



	Reader service number	Performance	Ease of use	Controlling the host	Collaboration	Service and support	Standard communications	Price	Overall value
Carbon Copy Plus 6.0	671	☆☆½	☆☆½	☆☆	☆☆½	☆☆½	☆☆	☆☆½	☆☆½
Central Point Commute 1.1	673	☆☆	☆☆	☆☆	☆☆	☆☆	½	☆☆☆☆	☆☆
Close-Up Dual Pack 4.0	672	★★★★	★★★★	★★★★	★★★★	**	***	***½	★★★★
CO/Session 6.0	674	☆☆½	☆☆½	☆☆	☆☆	☆☆½	☆☆	☆☆½	☆☆½
pcAnywhere 4.03c	675	½	☆☆	☆☆	☆☆☆☆	☆☆	☆	☆☆½	☆☆
Remote2 2.1	676	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆
Takeover Lite 2.0	677	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆	☆☆

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Buying Smart: Finding Remote Quality



PERFORMANCE

Running software remotely is slow: Imagine putting one modem connection between your keyboard and computer and another between your computer and your monitor, and you'll understand why. Still, you don't want to wait forever. If you regularly access graphics applications remotely, a 9600-baud modem is a must. Although all our speed tests were run at 2400 baud, we also made sure each program worked with 9600-baud modems.

When calculating performance ratings, we weighted our WordPerfect Mixed Use Test most heavily. This test simulates a typical remote session by loading and editing a file and switching between text and graphics modes. Although the WordPerfect test included text and graphics screen painting, we also tested them separately. If you plan to spend more time swapping files than running software remotely, check out our File Transfer benchmarks.



EASE OF USE

No matter how well organized the menus, a remote program that keeps crashing your favorite application isn't easy to use. Above all, you need a dependable program, relatively free of bugs, that's capable of catching errors before they do any harm. Of course, well-designed menus and a good manual are also important.



CONTROLLING THE HOST

You'll want the RAM-resident host program to take up as little memory as possible so the software you'll be running remotely will

have plenty of room to play. If you can trim unneeded features from the host program to free up more RAM, so much the better.

If you work with graphics, make sure your program can handle your systems' graphics standards—especially if more than one standard is involved. Remote programs that can successfully translate an image from a VGA host to an EGA guest are rare.

Software support is also important. Look for a program that will let you control the mouse and run Windows applications remotely (preferably in enhanced mode). If you plan to transfer files on a regular basis, look for a program that can transfer files in the background and automate the transfer process. All the programs offer built-in error checking, and most let you request retransmission if a screen arrives in bad shape.

All the programs offer password protection, but if security is important, you might also consider one that notes failed log-in attempts. If more than one person will be dialing into the host PC, look for a package that lets you restrict the files that callers can transfer as well as the directories and applications they can enter. Virus screening is always a plus when you're swapping files.



COLLABORATION

Remote programs are great tools for collaborative work. All these programs have pop-up chat boxes for exchanging typed comments while working, but a voice/data switch will also let you talk to each other over the same phone line.

If you're going to train people over a remote connection, look for a

program that records screens and keystrokes so that you can play them back. And if you can blank the other PC's screen, you'll be able to shield computerphobes from the horrors of batch files and examine sensitive data you'd rather they didn't see.



SERVICE AND SUPPORT

Because setting up remote software is complex, figure on at least one or two calls to the vendor's tech support department. To test technical support, we called each vendor three times, asking questions of varying technical complexity and noting the timeliness and accuracy of the answers. We also factored in support policies such as hours, toll-free lines, and BBS and fax support.



STANDARD COMMUNICATIONS

If you don't already own a standard communications program, you'll appreciate a remote package you can use to call a BBS or other on-line service. You'll want a good selection of protocols for transferring files outside of a guest/host situation. Most on-line services expect to talk only to a terminal, so your software must be able to emulate one.

The ability to transfer files in the background is a plus. But just because a program can manage background transfers while talking to its remote counterpart doesn't mean it can do the same thing on line to CompuServe. Finally, macros and script support simplify logging on to a service, while a learn mode makes creating those macros and scripts more convenient.

FEATURES EVALUATION

Close-Up and Personal

With Best Buy Close-Up, you won't feel remote. Its dependable video translations and solid Windows support make the remote PC feel as personal as possible.

- Yes
- No
- ◐ Deficient

	Carbon Copy Plus 6.0	Close-Up Dual pack 4.0	Central Point Commute 1.1	CO/Session 6.0	PolAnywhere 4.03c	Remote 2.1	Takeover Lite 2.0
Standard features							
List price ¹	\$199	\$199	\$129	\$195	\$179	\$195	\$179
Top modem speed (baud)	9600	115,000	115,000	115,000	115,000	38,400	57,600
LAN version available	● ²	●	●	●	●	●	○
Controlling the host							
RAM used by host version	60K	34K-80K	15K-60K	5K-103K	20K	55K-65K	77K
Trim unused host features to free RAM	○	●	●	●	○	●	●
RAM used by guest version	170K	153K	15K-60K	125K	60K-77K	128K	275K-480K
EGA-to-VGA graphics translations	◐ ³	●	◐ ³	◐ ³	○	●	●
VGA-to-EGA graphics translations	◐ ³	●	◐ ³	◐ ³	○	●	◐ ³
Remote Windows support	○	●	●	●	○	◐ ⁴	○
Remote mouse support	○	●	◐ ³	◐ ⁵	○	○	◐ ³
Accepts calls from other software	○	●	○	○	○	●	○
Automated file transfers	●	●	●	◐ ⁶	◐ ³	●	●
Background file transfers	●	●	○	●	●	○	◐ ⁷
Script language	○	●	●	◐ ⁶	◐ ³	○	●
Error checking	●	●	●	●	●	●	◐ ⁸
Repaints screen on command	●	●	●	◐ ⁹	●	○	●
Caller log	●	●	●	●	●	●	○
Restricts file transfer rights	●	●	●	●	○	●	●
Restricts callers to specified directories	●	●	○	●	○	●	●
Restricts callers to specified applications	○	●	○	●	◐ ¹⁰	●	●
Built-in virus protection	○	●	●	○	○	○	○

¹ Price includes both guest and host versions.
² Included with modem version.

³ PC World could not get this feature to work across all platforms.
⁴ In Real mode only; no mouse and limited application support.
⁵ Only one PC at a time can control mouse.

⁶ Extra-cost option.
⁷ On call-in PC only.

remote host modes that will do the trick. But if you need to run applications from afar, a full-fledged remote package is the only way to go.

You Can't Always Get There From Here

When you stop and think about it, remote communication is an amazing feat—when it works. Tiny incompatibilities you'd never notice in one computer can become hulking monsters

when you try to control it from another.

Remote communications packages usually consist of two programs—a small RAM-resident program for the host PC that you wish to control, and a more substantial one for the guest PC (sometimes called the call-in or remote) that will control it. To discover which of the seven top packages are fastest, easiest, and most dependable, we rigorously tested them by running one computer from another, collaborating on

shared files, sending files back and forth, and dialing into BBS's.

Our testing uncovered problems with several of the packages. Whereas general communications programs usually work with virtually any modem—even that perpetually hissing pink thing you bought for \$39.95—remote software can be thrown into blithering disarray by anything from an unusual BIOS to an outdated mouse driver. It's not at all surprising that

	Carbon Copy Plus v.0	Close-Up Dual Pack 4.0	Central Point Commute 1.1	CO/Session v.0	4.03c pAnywhere	Remote2 2.1	2.0 Takeover Lite
Collaboration							
Voice/data switch	●	●	○	●	●	○ ¹¹	●
Playback	●	●	○	●	●	○	●
Blank remote PC screen	●	●	○	●	●	●	●
Service and support							
Daily support (hours)	11	10	11	10.5	8	12	8
Unlimited free support	●	●	●	●	●	●	●
Toll-free support number	○	●	○	●	○	○	○
Weekend support	○	●	○	○	○	○	○
BBS support	○	●	●	●	●	●	●
Fax support	●	●	●	●	●	●	●
Other extra-cost training or support	○	●	○	○	○	○	●
Standard communications							
Error-checking protocols							
XMODEM	●	●	○	●	●	● ¹²	●
YMODEM	●	●	○	○	○	● ¹²	●
ZMODEM	○	●	○	○	○	○	●
CompuServe B	○	●	○	○	○	● ¹²	●
Kermit	●	●	○	○	○	○	●
Terminal emulations							
TTY	○	●	○	●	●	● ¹²	●
DEC VT-100/102	●	●	○	● ³	○	● ¹²	●
IBM 3101	●	●	○	○	○	○	●
Terminal-mode background transfers	○	●	○	○	○	○ ¹²	○ ¹³
Capture screen snapshots	●	●	○	●	●	● ¹²	●
Terminal macros/script support	●	●	○	○ ¹⁴	○	● ¹²	●
Learn mode for recording log-ons	○	●	○	○	○	● ¹²	●

BEST BUY

⁸ Doesn't work properly when compression is enabled.

⁹ Repaints from RAM; doesn't retransmit image.

¹⁰ Can restrict caller to one application, which loads at log-on.

¹¹ Can switch only from data to voice.

¹² In separate, bundled program.

¹³ Not enough memory to run other applications.

¹⁴ Can automate log-ons, but full script language is extra-cost option.

as our tests proceeded, dependability emerged as an important factor in our Ease of Use category.

Five programs promised to send graphics screens from a VGA host to an EGA guest, but only DCA's *Remote2* did it correctly on all our platforms. Several makers brag about remote mouse support, but only Norton-Lambert's *Close-Up* proved friendly with every rodent. Of the three programs that promised to support *Windows* in

386 enhanced mode, only one—*Close-Up* again—worked reliably and at a reasonable pace.

Dependable *Windows* and remote mouse support weren't the only qualities that earned Norton-Lambert's *Close-Up* its Best Buy; the program also sports beautifully fast screen painting and an interface that's fun to use. Coming in second is Digital Communications' *Remote2*—not as fancy a program as *Close-Up* but the best at

catching errors and handling non-*Windows* graphics. Your chances of being satisfied with either of these products are anything but remote.

Judy Heim is a contributing editor and Eric Brown senior reviews editor for PC World.

For more information about all the products in this article, circle reader service no. 902.

Carbon Copy Plus 6.0

PROS: Comes with LAN version

CONS: No remote mouse or Windows support, top modem speed 9600 baud

Microcom's *Carbon Copy Plus* is the only program here that comes with a separate LAN version in the box. Also, thanks its large installed base, the program is a good choice if you'll be working with people outside your company. But for graphics applications, this program is iffy.

Carbon Copy is very easy to set up and at first glance seems easy to use. One simple control screen leads you to every option and even doubles as a chat window. But the manual is spare, and on-line help is almost nonexistent. Some jobs are needlessly clumsy—for instance, you transfer files through a command line rather than a menu.

Graphics are a real problem. We found *Carbon Copy* prone to crash when a VGA host sent graphics to an

EGA guest. Even when both systems had VGA, graphics occasionally sent *Carbon Copy* into a loop, repainting the same screen over and over, with different colors on each try. Although the program performed passably in most of our speed tests, it was fairly slow at repainting a graphics screen. What's more, its 9600-baud limit means you can't increase your modem-to-port speed for maximum performance.

You can use the guest version of *Carbon Copy* for standard communications, but you probably won't want to. One more problem: You must exit the program to edit the phone book.



You can do almost everything in *Carbon Copy* from one screen, but compatibility problems abound.

Carbon Copy Plus 6.0 doesn't support Windows, but a *Windows* version will be available by the time you read this (see "New Windows on *Windows*"). If you're a DOS user, consider *Carbon Copy* only if you plan to stay in text mode, especially if you need to work with other *Carbon Copy* users.

New Windows on Windows: Carbon Copy for Windows and pcAnywhere 4.5

Eric Brown

Only six months ago, you simply couldn't do it. But recently, several remote communications vendors have cracked one particularly tough nut: running *Windows* from a distant PC. As the accompanying reviews note, however, only *Close-Up* has really got the trick down, performing reliable remote *Windows* (in enhanced mode) at a reasonable pace. But by the time you read this, Norton-Lambert should have some fresh competition at harnessing enhanced-mode *Windows* from afar: *Carbon Copy for Windows* and *pcAnywhere 4.5*.

Unlike *Close-Up*, a DOS package that lets you access both DOS and

Windows applications, the \$199 *Carbon Copy for Windows* is a *Windows* program that also requires *Windows* on the other end. You can access any DOS application you can bring up in a window, but you can't exit to DOS and remotely run a DOS application full screen. A VGA guest can access an EGA host and vice versa, though when an EGA guest accesses a VGA host, the guest has to scroll to see the whole screen. The program supports built-in modem compression, so you can get tolerable performance from a 2400-baud modem running MNP-5 or V42.bis compression, and it now supports the faster 14,400-baud V32.bis modems.

pcAnywhere 4.5 is an upgrade to the DOS-only package reviewed in the accompanying article. Reflecting the efforts of Symantec's Norton team (Symantec recently acquired the \$179 package), the new program boasts better speed and reliability—over 90 modems are now supported, and setting up a communications session requires fewer steps. A new script language can automate file transfers, and standard communications features have been boosted with the addition of YMODEM and Kermit transfer protocols and new terminal emulations. A new LAN version, *pcAnywhere/LAN 4.5*, also includes *Windows* support.

Close-Up Dual Pack 4.0

PROS: Great Windows and mouse support, lightning speed, good error handling

CONS: Slow technical support



Norton-Lambert's *Close-Up* is the fastest, easiest, and the most reliable program we

looked at in this roundup. About the only important job it can't do is transmitting graphics images from a VGA host to an EGA guest, and unlike a lot of programs, *Close-Up* made no claims that it could.

Close-Up is easy to set up and use—only two programs are included (one for the guest and one for the host), with no family of little EXEs to load and unload as you go from one job to another. Every tool you need is located in the host or guest pulldown menu bar.

Close-Up is the undisputed speed champion, coming in first in three out

of four tests and running a close second in the other. In the complex *Word-Perfect Mixed Use* test, it beat second-place winner *Remote2* by a factor of nearly 4 to 1.

The program's remote handling of *Windows* is simply dazzling—as long as both PCs use the same graphics standard and both modems run at 9600

baud. You can stack windowed DOS applications and cut and paste between them. If you run *Close-Up* in *Windows* on the guest, you can even cut and paste between the two computers.

Although the package lacks the variety of terminal emulations and file-transfer protocols that *Takeover Lite*



When you load *Close-Up*, a friendly 'Welcome' screen helps you get started, and top speed and good error handling keep you going.

offers for standard communications, it does have the best scripting language of the bunch.

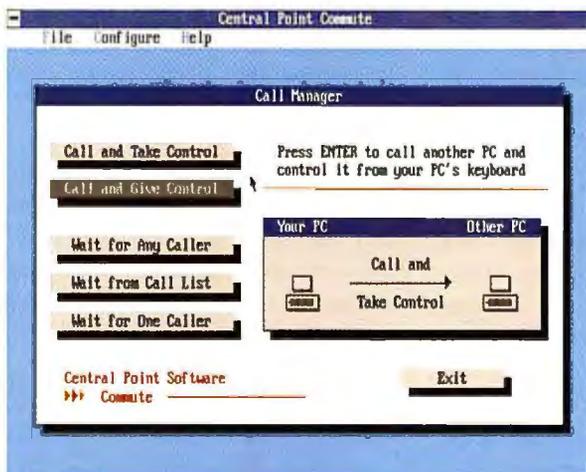
Norton-Lambert needs to beef up support—we spent a lot of time on hold—but there's really no contest. *Close-Up* is the Best Buy for just about anyone who needs to go remote.

Central Point Commute 1.1

PROS: Low price, spiffy user interface

CONS: Slow, undependable graphics transmissions, no conventional communications

If you own Central Point's *PC Tools Deluxe 7.x*, you've already got a copy of *Commute*, and if you rarely need



You'll feel right at home with *Commute*'s point-and-shoot interface, but the program's on-line behavior is undependable.

remote links, that copy will probably suffice. But you should think twice about buying *Commute* on its own, even at its low \$129 price.

With its plain-English pulldown menus, *Commute* is a breeze to set up, and as long as your needs are simple, it's pretty easy to use. But the disorganized, incomplete documentation turns

any complex task into a real hassle.

Commute proved to be totally undependable for certain graphics tasks. When we tried running *Windows* or another graphics application from a VGA host on an EGA guest, everything went monochrome. When an EGA host tried to send graphics to a VGA guest, *Com-*

mute just plain died on both ends. Even when both PCs used the same video standard, *Commute* occasionally froze up when sending graphics screens.

If you do get *Windows* running with *Commute*, you'll need plenty of patience—even at 9600 baud, the going is slow. What's more, you won't be able to run DOS applications under *Windows*, and if you and your partner call up *Commute*'s chat box to talk to each other, your end of the conversation is as likely to end up in your partner's *Excel* worksheet as in the other chat box.

Windows isn't the only stumbling block. Mouse support is a definite maybe—the program just can't control some mice from a distance. *Commute* won't help you switch from voice phone to modem when you need to handle your phone manually.

PC Tools users may find *Commute* acceptable for occasional remote access to DOS applications. But if you're serious about going remote, check out *Close-Up*.

Co/Session 6.0

PROS: Very fast, great user interface, very good technical support

CONS: Graphics hang-ups, rocky Windows support, on-line menu limitations

Next to *Close-Up*, Triton Technologies' *Co/Session* has the best user interface in the group. But you'll find *Co/Session's* Windows support and graphics translations somewhat unreliable.

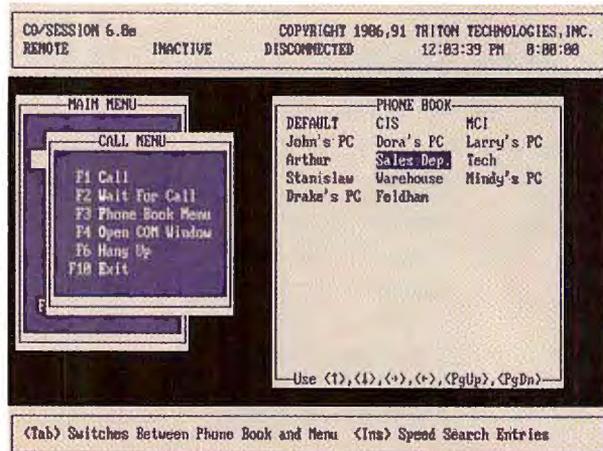
The program's menus are clearly written and easy to follow. Both sides of *Co/Session* are memory resident, with toggle-up screens that appear either on line or off.

The program has many curious limitations, however. It boasts remote mouse support, but only the guest user can control the mouse on line. If you're running Windows or another graphics program, you can't bring up on-line menus or chat boxes. Furthermore, when you tell the guest program to refresh the screen, it does so from

memory, with dubious results.

Graphics applications gave *Co/Session* problems during our tests. Going from a VGA host to an EGA guest turned the screen into sixties poster art. Even when both systems had VGA, *Co/Session* botched spreadsheet charts. The bundled *Windows* video driver—needed for running *Windows* with *Co/Session*—sometimes sent the screen into a frenzy when we tried to run a windowed DOS program, even if *Co/Session* wasn't running.

If you phone Triton with these problems, though, at least you'll find help. Every time we called, we got through to a technician right away.



Co/Session's function key-oriented interface makes menu selection easy no matter where you are in the program.

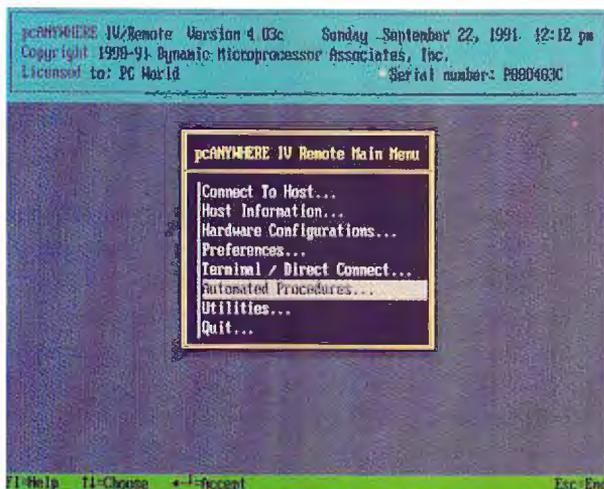
A maintenance release, version 6.01, shipped too late to be included in this roundup, so some of the bugs may be fixed by the time you read this. Judging from version 6.0, however, *Co/Session* can be recommended only for users of text-based programs who plan to do a lot of file transfers.

pcAnywhere 4.03c

PROS: Low memory usage on host

CONS: Extremely slow, no graphics translation

Symantec acquired *pcAnywhere* last fall and is currently working on a major upgrade. The new owners have a long way to go, however, if they hope to turn *pcAnywhere* into a winner.



This screen may look simple, but making a selection will almost certainly take you to another menu . . . then another, and another.

The program's menus are simple and self-explanatory, but wading through them is laborious. For instance, to enter a number into the phone book, you must pick through four menus. In contrast, this process takes only one step in *Close-Up*.

The program is unacceptably slow. In our *WordPerfect* Mixed Use test,

pcAnywhere took seemingly forever—54 minutes just to complete a series of tasks that most of its competitors handled in less than 10 minutes. This snail's pace makes *pcAnywhere* a questionable choice for cooperative work, despite the program's top-notch collaboration features.

Symantec does not claim that its

pcAnywhere can translate graphics screens from a VGA host to an EGA guest, but we found that even VGA-to-VGA graphics occasionally caused system crashes. What's more, this program blacks out both screens for a long stretch while transferring graphics—and since there's no 'please wait' message, you're likely to assume your connection is lost. Even text-based programs aren't immune to problems—on one of our setups, *WordPerfect* screens had black lines running across them.

The program is extremely weak at standard communications. You're limited to XMODEM file transfers and TTY terminal emulation. Moreover, the scripts didn't always work—each attempt at automating file transfers resulted in an error message that no one at Symantec could diagnose.

The upcoming *pcAnywhere 4.5*, expected by the time you read this, may prove to be a contender (see "New Windows on Windows"), but we can't recommend the current version.

Remote Computing Reaches Out to LANs

If you want to make LAN administrators, MIS directors, or corporate trainers happy, give them a LAN remote package—it will shave hours off their work week by letting them train users and examine misbehaving PCs from the comfort of their own office. Most remote communications vendors also sell LAN programs that let one network workstation control another. These are seldom functionally identical to the similarly named modem packages.

Increasingly, LAN remote packages are serving as more than administrative utilities. Anybody collaborating on a project will find them useful. If you and your boss are arguing over next year's budget, for instance, the two of you can use a LAN remote program to examine and change the same worksheet, each seeing immediately how the other's numbers will work.

When buying a LAN package, you need to consider several issues that don't come into play with remote modem packages. First is compatibility: If you use Novell

NetWare, you'll have no trouble finding a remote program that runs on your LAN. But if you use LAN Manager, Lantastic, or other LANs, you'll need a program that supports the NETBIOS network protocol.

If you'll be training users, look for a program that lets you daisy-chain PCs so you can demonstrate techniques on more than two computers at a time. If technical support is part of your plan, you'll want built-in LAN diagnostic tools that can tell you, among other things, which programs are in memory. And if you want to dial in from an off-site PC to a network workstation, make sure your LAN remote package works with your modem version.

One hazard of LAN remote programs is their potential for administrative snooping. Luckily, all the programs listed here can be set up to notify a potential host before a guest "enters" the host's computer, so the host can decide if the guest is welcome. If it's up to you, make sure this option is turned on; otherwise, be careful what you type.

	Carbon Copy Plus LAN	Close-Up LAN 2.5	Co/Session LAN II 6.0	LAN Assist Plus	LANSight 2.1	Netremote+ 4.11	pcAnywhere /LAN 4.0	R2 LAN 2.0	Remote Access 2.0
Price	\$199 ¹	\$795	\$195	\$295	\$395	\$350	\$645	\$795	\$395 ²
NETBIOS network protocol support	Y	Y	N	Y	N	N	Y	Y	Y
Wide area-network support	Y	Y	Y	N	N	Y	N	N	Y
Daisy-chain support	Y	Y	N	Y	N	Y	N	N	Y
LAN diagnostic tools	N	N	N	N	Y	Y	N	N	N
Works with modem remotes	Y ³	Y	Y	Y ⁴	Y	Y	Y ³	Y	Y
Remote graphics translations (VGA, EGA)	Y	N	Y	Y	Y	Y	Y	Y	Y
Remote Windows support	Y	N	Y	Y	Y	Y	N	N	Y
Remote mouse support	Y	N	Y	N ⁵	Y	Y	N	N	N
Automated file transfers	N	N	Y	Y	Y	N	Y	Y	N ⁶
Remote printer support	N	Y	Y	N	Y	N	Y	Y	N ⁶
Chat window	Y	Y	Y	N	Y	N	Y	Y	N ⁶
Password protection	Y	Y	Y	Y	Y	Y	Y	Y	Y
Restricts file transfer rights	N	N	Y	N	N	N	N	Y	N
Restricts users to specified directories	N	N	Y	N	N	N	N	Y	N

¹ Included with modem version.

² Windows and OS/2 versions available at additional cost.

³ With vendor's product only.

⁴ With Co/Session only.

⁵ Works only with Windows programs.

⁶ Extra-cost option.

For more information about all products in this sidebar, circle reader service no. 904.

WHERE TO BUY

Carbon Copy Plus LAN

Microcom Inc.
800/822-8224

Reader service no. 678

Co/Session LAN II 6.0

Triton Technologies, Inc.
800/322-9440

Reader service no. 680

LANSight Support

Intel Corp.
5200 N.E. Elam Young
Pkwy.
Hillsboro, OR 97124

Reader service no. 682

Netremote+ 4.11

Brightwork Development
800/552-9876

Reader service no. 683

R2 LAN 2.0

Digital Communications
800/348-3221

Reader service no. 685

Close-Up/LAN 2.5

Norton-Lambert Corp.
805/964-6767

Reader service no. 679

LAN Assist Plus

Fresh Technology Co.
800/545-8324

Reader service no. 681

pcAnywhere/LAN 4.0

Symantec Corp.
800/441-7234

Reader service no. 684

Remote Access 2.0

Shani Computer Ltd.
213/204-0111

Reader service no. 686

Remote2 2.1

PROS: Easy to use, top graphics translation
CONS: No remote mouse, weak on Windows

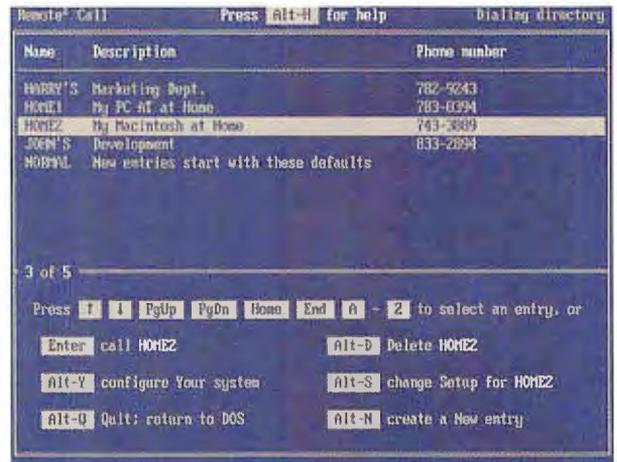
DCA's *Remote2* stands out by way of its invincible graphics handling—nothing we tried could bring it down. This is the only program in the roundup that can send a graphics image from a VGA host to an EGA guest without problems. Its *Windows* support is weak, it's no friend to mice, and it doesn't offer many extras, but for mouseless DOS users, *Remote2* makes a good choice.

The program's interface isn't quite as well designed as *Close-Up's*, but *Remote2's* simple setup, first-rate manual, and exemplary error handling make it even easier to use. The intuitive interface, based on a dialing directory, is particularly handy if you have many remote partners.

Remote2 has its limits. It supports *Windows* only in Real mode and mouseless, and we had trouble even

then. The program has no script language, although you can automate file transfers with batch files. And since its standard communications abilities come in a separate, bundled program, you lose the convenience of calling up CompuServe direct from *Remote2*. Finally, the voice/data switch is actually a data/voice switch—you can go in only one direction.

On the upside, you can use a conventional communications program as the guest when *Remote2* is the host. Although this method limits your options, it can prove useful if you need to limit the number of programs on your laptop or notebook.



Remote2 easily translates graphics between VGA and EGA. Its dialing directory gives you quick access to frequently called phone numbers.

When we called DCA, we consistently got responsive, polite answers. We sometimes waited on hold for a few minutes, but we got great help.

Remote2 has limitations, but its graphics ability, error handling, and dependability make it a great choice for non-*Windows* users.

Takeover Lite 2.0

PROS: Good standard communications
CONS: Messy interface, poor error handling, slow file transfers

A stripped-down version of *Takeover II*, *Takeover Lite* doesn't include the bigger program's all-purpose communications program (which is also sold

separately as *Mirror III*). *Takeover Lite* still comes with the most complete standard communications capabilities in the roundup, but as a remote program, it's unexceptional.

Takeover's menus are cramped and often hard to fathom, and the host user can't access the menus at all while on line, even to launch file transfers or

hang up the phone. Lack of access to menus is a problem in collaborative situations where both users share responsibilities equally—a shame since *Takeover's* collaborative features are otherwise quite good.

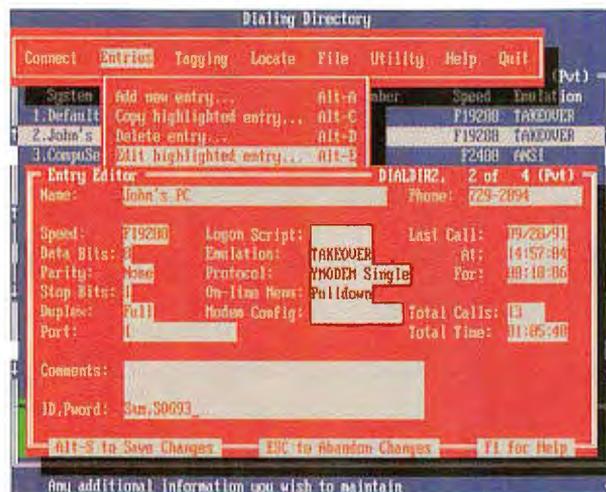
Takeover proved undependable when handling graphics screens and mice. We couldn't make VGA-to-EGA trans-

fers work on all platforms, and even VGA-to-VGA graphics caused crashes in one of our test platforms. Remote mouse support proved totally dependent on the pedigree of the mouse.

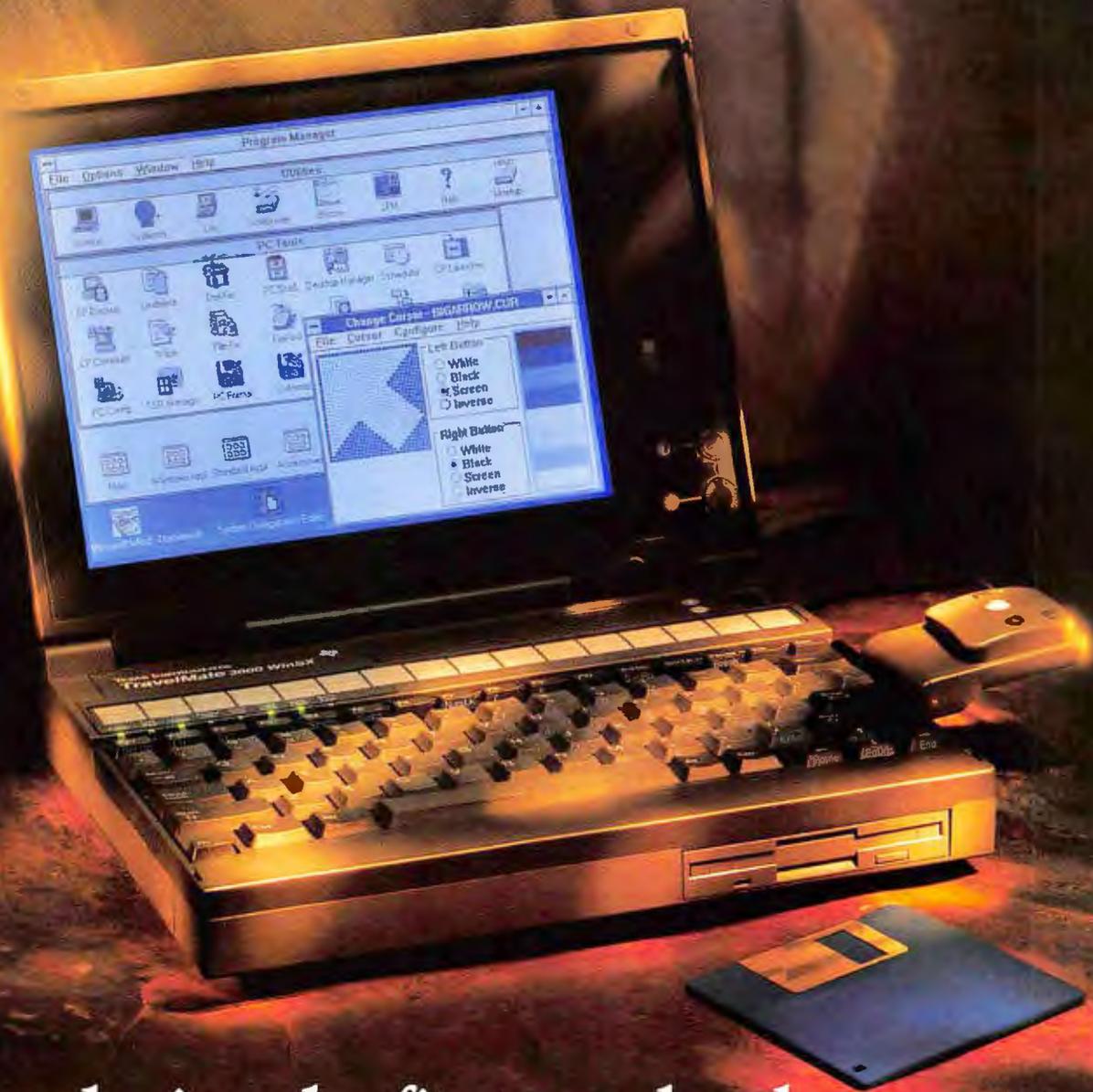
Performance was mediocre in general, and in our file transfer test *Takeover Lite* came in dead last—even *pcAnywhere* beat it. In theory, you can transfer files in the background, but the guest program's 480K RAM appetite gets in the way.

Takeover Lite offers error checking and compression, but when we tried using the two features together, our guest screen turned into something from *The Twilight Zone*. SoftKlone's tech support blamed the phenomenon on our "unsupported" modem, but the Hayes Ultra we used was listed as an installation option.

If you're looking for an inexpensive communications program with some remote capabilities, you might want to consider *Takeover Lite*; but even for this purpose, better options exist. ☉



Takeover Lite's guest program has overcrowded, incomprehensible menus. When the host program is on line, it offers no menus at all.



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PC WORLD TEST REPORT

Nothing Comes Close to Close-Up

Some lag is inevitable when you run a PC remotely; the trick is to minimize delays with a fast modem and high-performance software. Best Buy Close-Up was the clear winner.

BEST BUY

WordPerfect mixed use

Close-Up	121
Remote2	447
Carbon Copy Plus	504
Takeover Lite	574
Co/Session	1206
Commute	1423
pcAnywhere	3244

Graphics screen painting

Close-Up	244
Commute	270
Remote2	274
Co/Session	277
Carbon Copy Plus	342
Takeover Lite	375
pcAnywhere	626

Text screen painting

Close-Up	68
Remote2	73
Co/Session	75
Takeover Lite	78
Carbon Copy Plus	82
Commute	90
pcAnywhere	91

File transfer

Co/Session	203
Close-Up	221
Carbon Copy Plus	360
Remote2	447
Commute	580
pcAnywhere	634
Takeover Lite	781

Time in seconds.

Methodology

Tests used 20-MHz 386SXs, 2400-baud Hayes-compatible modems, 800 by 600 VGA, and DOS 5.0. We dialed in from guest to host. We initiated each test on the host and timed the guest's screen redraw.

WordPerfect mixed use

We load a WordPerfect document with a TIFF

image. We move the TIFF image and repaginate the document. We view the document in Print Preview mode.

Graphics screen painting

We use VGFIF to view a scan of a color photograph.

Text screen painting

We load a text file into WordPerfect. We cut and paste sections of text and repaginate the docu-

ment. We view the document in text mode only.

File transfer

A 134K file is sent from host to guest using each program's file transfer utility.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

WHERE TO BUY

Carbon Copy Plus 6.0

Microcom Inc.
500 River Ridge Dr.
Norwood, MA 02062
800/822-8224,
617/551-1000
Reader service no. 671

Close-Up Dual Pack 4.0

Norton-Lambert Corp.
P.O. Box 4085
Santa Barbara, CA

93140
805/964-6767,
805/683-5679 (fax)
Reader service no. 672

Central Point Commute 1.1

Central Point Software, Inc.
15220 N.W. Greenbrier Pkwy. #200

Beaverton, OR 97006
800/445-4208,
503/690-8083 (fax)
Reader service no. 673

Co/Session 6.0

Triton Technologies, Inc.
200 Middlesex Tnpk.
Iselin, NJ 08830
800/322-9440,
908/855-9608 (fax)
Reader service no. 674

pcAnywhere 4.03c

Symantec Corp.
10201 Torre Ave.
Cupertino, CA 95014-2132
800/441-7234,
408/255-3344(fax)
Reader service no. 675

Remote2 2.1

Digital Communications Associates
1000 Alderman Dr.

Alpharetta, GA 30202
800/348-3221,
404/442-4366 (fax)
Reader service no. 676

Takeover Lite 2.0

SoftKlone Corp.
327 Office Plaza Dr.
#100
Tallahassee, FL 32301
904/878-8564,
904/877-9763 (fax)
Reader service no. 677

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Plus, with CDPC, applications like MacroMind's Action!, Animation Works and Asymetrix ToolBook help your business presentations take on even greater depth and dimension. And it's no surprise that multimedia is a teacher's dream come true. It entices, enlightens and entertains—and everyone knows that entertainment is the best form of communication—especially when used with applications like Compton's Multimedia Encyclopedia, Bookshelf for Windows and The Berlitz Foreign Language Series.

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The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We carry only the latest versions of products. Version numbers are current at press time. Products listed here in red are Microsoft Windows Applications.

- AddStor ... NCP**
4090 SuperStor 1.3 \$83.
- Adobe Systems ... NCP**
7547 Adobe Type Manager 2.0 for Windows . 69.
9623 Adobe TypeAlign 1.0 for Windows . 69.
 Adobe TypeSets for Business. . . ea. 95.
9874 Adobe TypeAlign 1.0 w/ATM. . . . 125.
7928 Adobe Plus Pack 1.0. 129.
8367 ATM & Plus Pack Bundle. 169.
7392 Adobe PostScript Cartridge (with choice of FREE Type Cartridge 1 or Type Cartridge 2) 299. (Entire Adobe Type Library, from 1 to 240 is available. Call for more information.)
- Aldus ... NCP**
8000 Persuasion 2.0 for Windows 359.
1332 PageMaker 4.0 549.
4195 Photostyler 1.0 549.
- Application Techniques ... NCP**
1214 Pizazz Plus 2.0 69.
9621 Picture Eze 1.0 for Windows 99.
- Artisoft ... NCP**
2455 Lantastic EtherNet Starter Kit (includes software, 2 EtherNet cards, cable) 495.
2452 EtherNet Adapter Card 209.
- Atech Software ... NCP**
9436 Publisher's Powerpak 1.2 for Windows . 49.
9435 Publisher's Powerpak 2.1 for WordPerfect & Microsoft Word 49.
4797 AllType 1.0 (universal typeface converter) 49.

- Attitash Software ... NCP**
8846 WideAngle 2.0 \$79.
- Automap ... NCP**
2729 Automap 1.0. 52.
- Avery Dennison ... NCP**
6006 Label Pro 1.6 (Laser). 49.
7336 Label Pro 1.0 for Dot Matrix 49.
- Banner Blue Software ... NCP**
3322 Family Tree Maker 2.0 45.
3324 Org Plus Advanced 6.0. 65.
- Berkeley Systems ... NCP**
9885 After Dark 1.0A for Windows. 29.
- Bitstream ... NCP**
7568 FaceLift 1.2 for Windows 2.x/3.0. . . . 59.
8040 FaceLift 1.5 for WordPerfect 5.0/5.1 . . 59.
7569 Companion Value Pack 1.0. 125.
 Typeface Packages ea. 89.
- Borland International ... NCP**
3551 Quattro Pro SE 1.0 47.
6242 Quattro Pro 3.0. 339.
9695 Borland's C++ 2.0. 339.
1514 Paradox 3.5 529.
9635 Object Vision 2.0 call
- Broderbund ... NCP**
1434 New Print Shop. 39.
- ButtonWare ... NCP**
6419 PC-File 6.0 89.
- Caere ... NCP**
8933 Omnipage Professional 1.0 669.



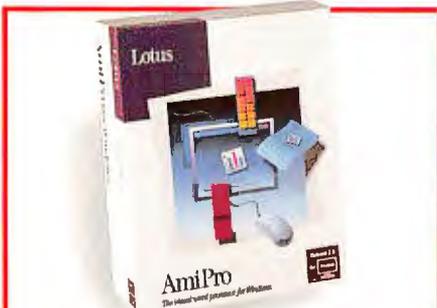
Corel Systems ... NCP
5506 CorelDRAW! 2.0—“CorelDRAW 2.0 is worth every penny. Special effects can even turn inexperienced artists into master draftsmen,” Luisa Simone of PC Magazine... \$379.
2618 CorelDRAW! 2.0 CD-ROM 449.

- Campbell ... NCP**
5068 On Time for Windows 1.0 75.
- Central Point ... NCP**
5039 PC Tools 7.1 115.
8114 Backup 7.0 (DOS and Windows) 84.
9751 AntiVirus 1.0 84.
- Chipsoft ... NCP**
1663 Turbo Tax Personal 1040 for DOS 9.0 . 49.
3517 Turbo Tax Personal 1040 for Windows 9.0 59.
State Tax Packages
DOS ver. . . ea. 38. Windows ver. . . ea. 49.
 ShortForm (for 1040 & E-Z filers)
DOS ver. . . . 25. 3782 Windows ver. . 25.
6221 Turbo Tax Personal 1040 for DOS 9.0 & Quicken Bundle 75.
3080 Turbo Tax Personal 1040 for Windows 9.0 & Quicken for Windows Bundle 75.
- Chronologic Corporation ... NCP**
8849 Instant Recall 1.2 64.
- CompuServe ... NCP**
7546 DOS Membership Kit 1.3 29.
- Concentric Data Systems ... NCP**
6575 R & R Relational Report Writer 4.0. . . 159.
- Corel Systems ... NCP**
5506 CorelDRAW! 2.0 379.
2618 CorelDRAW! 2.0 CD-ROM 449.
- DAC Easy ... NCP**
1748 Accounting 4.2 99.
1751 Bonus Pack 4.2 135.

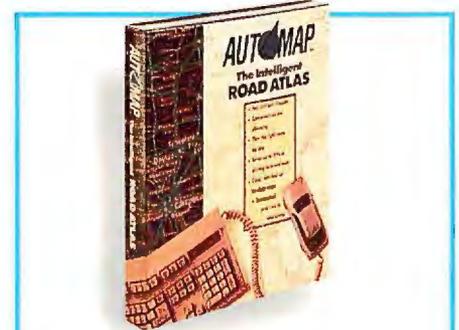


Chipsoft ... NCP
 Turbo Tax Personal 1040 for 1991 (Final edition)—Everything you need; features over 80 forms, schedules & worksheets plus a tax planning module. Prints IRS-approved returns.
1663 DOS . . . \$49. 3517 Windows . . . \$59.

- Data Storm ... NCP**
4798 PROCOMM PLUS 2.01 69.
- Delrina Technology ... NCP**
2446 WinFaxPro 2.0 75.
7351 PerFORMPRO 1.0 179.
- Digital Research ... NCP**
8288 DR DOS 6.0 69.
- Fifth Generation Systems ... NCP**
7725 Direct Access 5.1 69.
3950 Fastback Plus 3.0 125.
7795 Disklock 1.0 129.
- Fox Software ... NCP**
6188 FoxPro 2.0 489.
- Funk Software ... NCP**
9488 Sidelways 3.3 & P.D. Queue 1.0. 85.
- Geoworks ... NCP**
8789 Ensemble 1.2 129.
- Gibson Research ... NCP**
9832 SpinRite II 2.0 64.
- Great American Software ... NCP**
3978 One-Write Plus Accounting 1.0 (with free MECA TaxCut) 105.
4880 One-Write Plus Acct. Works 1.0. . . . 189.
- Helix Software ... NCP**
9627 Netroom 2.1 (single user) 65.
- Hilgraeve ... NCP**
8204 HyperACCESS/5 2.0 (DOS) 59.
- IBM ... NCP**
2666 DOS 5.0 Upgrade 59.
- Individual Software ... NCP**
1328 Professor Windows 1.0 27
6222 Resume Maker 1.3 29.



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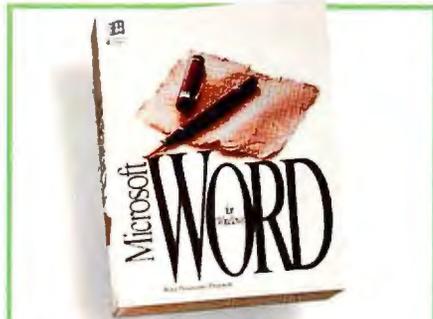
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4880 *One-Write Plus Accounting Works 1.0*—Ideally suited for a small business automating for the first time. Fully integrates accounting & payroll, word processing, mail merge, a backup utility, menu organizer & more. \$189.

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7298	<input type="checkbox"/> HiJaak 2.1	99.
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2748	<input type="checkbox"/> cc:mail Windows Platform Pack	325.
2749	<input type="checkbox"/> cc:mail 25 user Pack	379.
M-USA Business Systems ... NCP		
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3484	<input type="checkbox"/> Action! 1.0 (3½" only)	\$349
MECA ... NCP		
2798	<input type="checkbox"/> Managing Your Money 8.0	139
4603	<input type="checkbox"/> Andrew Tobias' Tax Cut 1991	49
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4408	<input type="checkbox"/> Micro Courier 1.0	59
7649	<input type="checkbox"/> Virex-PC 2.0	79
6234	<input type="checkbox"/> CarbonCopy Plus 6.0	119
4410	<input type="checkbox"/> CarbonCopy Plus for Windows	119
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3627	<input type="checkbox"/> Windows Draw! 3.0	95
Micro Logic Software ... NCP		
8579	<input type="checkbox"/> MoreFonts 3.0	75.
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9636	<input type="checkbox"/> Strunk & White Elements of Style 1.0	35.
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Microsoft ... NCP		
3338	<input type="checkbox"/> Money 1.0 for Windows	49
7010	<input type="checkbox"/> Windows 3.0	99
7388	<input type="checkbox"/> Project 1.0 for Windows	459
2904	<input type="checkbox"/> Works 2.0	99.
2735	<input type="checkbox"/> Works 1.0 for Windows	139
3337	<input type="checkbox"/> Publisher 1.0 for Windows	139.
2901	<input type="checkbox"/> Word 5.5	209.
7387	<input type="checkbox"/> PowerPoint 2.0 for Windows	329
6195	<input type="checkbox"/> Word 2.0 for Windows.	329



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4925	<input type="checkbox"/> PC-Kwik Power Pak 2.1	75.
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5122	<input type="checkbox"/> For The Record 2.0	35.
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Norton-Lambert ... NCP		
2753	<input type="checkbox"/> CloseUp for Windows & DOS Dual Pack	129
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4000	<input type="checkbox"/> Netware Lite 1.0	69.
Okna ... NCP		
9696	<input type="checkbox"/> Desktop Set 3.0 for Windows	85

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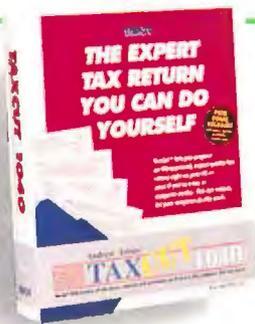
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4395	<input type="checkbox"/> PackRat 4.0	255.
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7857	<input type="checkbox"/> Labels Unlimited 3.0	59.
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4586	<input type="checkbox"/> DESQView 386 2.4	145.
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4155	<input type="checkbox"/> RightWriter 4.0	54.
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7891	<input type="checkbox"/> WealthStarter 2.0 w/Charles J. Givens	39.
6572	<input type="checkbox"/> WealthBuilder 1.1	99.
Reference Software ... NCP		
4396	<input type="checkbox"/> Grammatik IV 2.0	59.
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Roykore ... NCP		
2473	<input type="checkbox"/> Instant ORG Charting! 1.0	125
8162	<input type="checkbox"/> ABC Flowcharter 1.1	189
Sitka ... NCP		
6675	<input type="checkbox"/> TOPS Network Bundle 3.0	159.
3720	<input type="checkbox"/> Flashcard 2.1 (AppleTalk network card)	155.
Softlogic Solutions ... NCP		
3542	<input type="checkbox"/> Software Carousel 5.0	55.
Software Publishing ... NCP		
3496	<input type="checkbox"/> Professional Write 2.2	169.
9638	<input type="checkbox"/> Professional Write Plus 1.0	169
4389	<input type="checkbox"/> Harvard Draw 1.0	429.
3482	<input type="checkbox"/> Harvard Graphics 3.0	419.
4403	<input type="checkbox"/> Harvard Graphics 1.0 for Windows	419
6600	<input type="checkbox"/> Superbase 4 for Windows 1.3	529.
Software Toolworks ... NCP		
9859	<input type="checkbox"/> Word for Word 4.2 for Windows	47.
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Software Ventures ... NCP		
6889	<input type="checkbox"/> MicroPhone II 2.0	99
Spinnaker ... NCP		
1415	<input type="checkbox"/> PFS WindowWorks 1.0	129
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1409	<input type="checkbox"/> Stacker 2.0	89.
3524	<input type="checkbox"/> Stacker 2.0 w/16-bit Coprocessor Card	195.

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- 6397 The Norton Backup 1 2 (Windows/DOS) 89.
- 3146 The Norton Utilities 6.0 119.
- 3425 Q&A 4.0 269.
- 7999 Norton Anti-Virus 1.5 89.
- 2359 The Norton Desktop 1 0 for Windows 99
- 8378 PC Anywhere IV 4.03 125.

Systems Compatibility ... NCP

- 9046 Complete Writer's Toolkit 1.1 (DOS) 85.
- 3949 Complete Writer's Toolkit 1.0 for Windows 85

Teleware ... NCP

- 9847 M.Y.O.B. for Windows 139.

TIMESLIPS ... NCP

- 2987 Timeslips III 4.0 195.
- 5037 TimeSheet Pro for Windows 135

Timeworks ... NCP

- 6253 Publish-It! 2.0 159.

Tool Technology ... NCP

- 3863 WinTools for Windows 1 0 (3 1/2" only) 125.

Touchstone Software ... NCP

- 7420 Check It 3.0 89.

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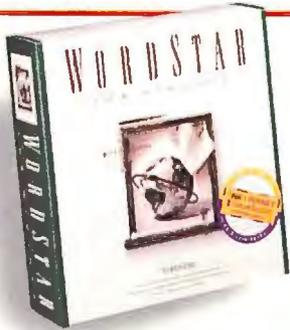
- 4407 LapLink Pro 4.0 95.

WordPerfect Corporation ... NCP

- 7781 LetterPerfect 1.0 135.
- 4214 WordPerfect Office PC 89.
- 3804 WordPerfect 5.1 265.
- 3494 WordPerfect 5 1 for Windows 279
- 3806 WordPerfect 5.1 Additional User 199.

WordStar International ... NCP

- 1482 Correct Grammar 1 0 for Windows 65.
- 3442 WordStar 1 0 for Windows 279



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- 3611 XTREE ... NCP
- XTree Gold 2.5 95.
- Z-Soft ... NCP**
- 1626 Publisher's Pantbrush for Windows 299

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- 3641 Design Your Own Railroad 39.
- 3629 Design Your Own Home-Architecture 3.0 63.
- 3631 Design Your Own Home-Interiors 1.0 63.

Broderbund ... CP

- 8068 Where in World is Carmen Deluxe 52.
- 1836 Where in America's Past is Carmen 39.
- 5851 SimCity from Maxis 33.
- 4388 SimAnt from Maxis 39.
- 4411 SimEarth for Windows from Maxis 45.

Davidson & Assoc. ... NCP

- 3947 Math Blaster Plus 29.
- 4183 KidWorks 29.

EARTHQUEST ... NCP

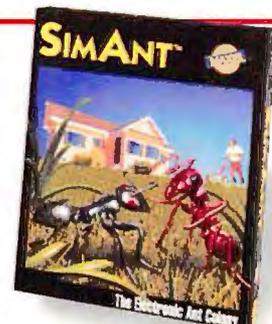
- EARTHQUEST 35.

Electronic Arts ... NCP

- 4534 Mavis Beacon Teaches Typing 2.0 (CP) 35.
- 3031 Mavis Beacon for Windows 45
- 3023 ChessMaster 3000 35.

Harvard Associates ... NCP

- PC Logo 3.0 59.



Broderbund ... CP
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True BASIC, Inc. ... NCP

- Kemery/Kurtz Math Series ea 45.
- Walt Disney Computer Software ... CP**
- 2629 Mickey's 123's 35.
- 2624 Mickey's ABC's 35.
- 4398 The Animation Studio 79.

HARDWARE

Warranties listed next to manufacturer.

American Power ... 2 years

- 7108 Smart UPS 400 339.
- 7105 Smart UPS 600 469.
- 3858 Back-UPS 400 185.
- 3823 Back-UPS 600 299.

ATI Technologies ... 2 years

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- 2706 VGA Wonder XL (w/1 MB) 199.
- 9985 VGA Integra (1024 x 768, 16 colors) 95.
- 2382 Graphics Vantage VGA (w/1 MB) 299.
- 9822 Graphics Ultra (w/1 MB) 419.
- 2012 Graphics Ultra w/VGA (w/1 MB) 479.
- 1825 2400etc/i Modem (w/9600 SendFax) 139.
- 9620 9600etc/e Modem 379.
- 3902 Stereo*FX 149.
- 3900 VGA Stereo*FX (w/512K, upgrd. to 1 MB) 329.

Boca Research ... 5 years

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- 7139 (4 MB) 329. 7138 (8 MB) 539.
- 6998 I/O Board for AT 55.
- 6999 I/O Board for Microchannel (S/S/P) 109.
- 8380 BasicVGA (256K, 640 x 480) 63.
- 8381 SuperVGA (1 MB, 1024 x 768) 145.
- 3859 2400 Internal Modem 85.
- 3860 2400 External Modem 109.

Bravo Communications ... 2 years

- 7400 2 Position Laser Compatible Switch Box 109.

Brown-Wagh ... 1 year

- 8578 Creative Labs Sound Blaster 115.
- 2336 Creative Labs Sound Blaster Pro 189.

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- 8158 Typist Plus Graphics 389.

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- 7897 BubbleJet Ink Cartridge (BJ-10ex) 23.
- 7896 BJ-10ex Sheet Feeder 75.

Cardinal ... 1 year

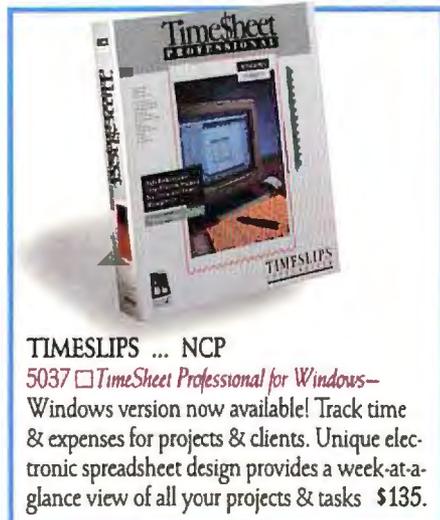
- 2720 MB2450 Internal 2400 Baud Modem 59.
- 2719 MB2296SR Internal Send/Receive Fax 109.
- 2721 VGA732 True Color Ultra VGA Card 175.
- 4124 VGA742 True Color Ultra VGA Card 199.

CH Products ... 1 year

- 7801 FlightStick w/Falcon 49.

Colorado Memory Systems ... 1 year

- 4194 Jumbo 120 Tape Backup 259.
- 4354 Jumbo 250 Tape Backup 315.



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- Word Torture for Windows ea 34
- Word Torture 3.0 ea. 29.

Knowledge Adventure ... NCP

- 3861 Knowledge Adventure 1.0 65.

Microsoft ... NCP

- 7881 Entertainment: Pack for Windows 1.0 29.
- 2858 Flight Simulator 4.0 39.
- 8270 Aircraft and Scenery Designer 1.0 29.

Penton Overseas ... NCP

- VocabuLearn/ce Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese) ea. 35.

Personal Training Systems ... NCP

- Training tutorials: beg. to adv. for Windows, Excel, PageMaker, & Lotus 1-2-3 (3 1/2") ea. 65

Sierra ... CP

- 2767 Leisure Suit Larry V (VGA) 39.
- 9466 Space Quest IV (VGA) 39.
- 3113 Police Quest III (VGA) 39.

Software Toolworks ... NCP

- 3294 Game Pak (5 games in one) 32.

Spectrum Holobyte ... NCP

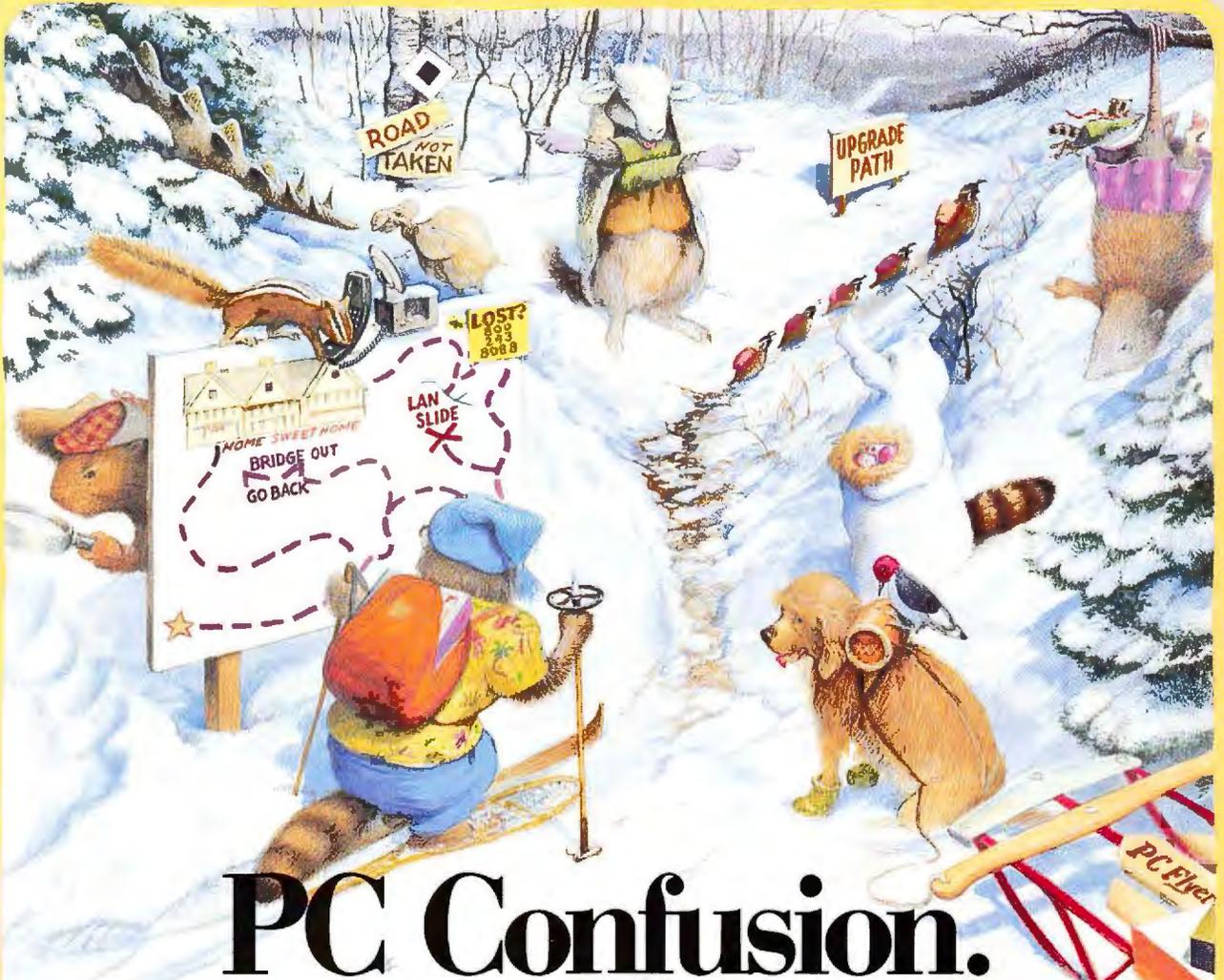
- 3047 Wordtris 27.

Stone & Associates ... NCP

- 3439 2nd Math 4.2 27.

Toyogo ... NCP

- 2703 Nemesis Deluxe Toolkit 5.0 75.
- 2704 Nemesis Deluxe Toolkit 5 0 for Windows 75.



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4542	2400 Baud Internal Modem for PS/2	...	229.
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9768	VRAM II VGA 1 MB	...	329.
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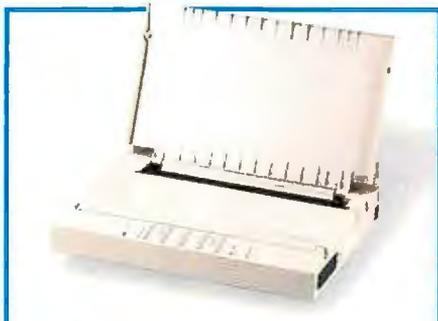
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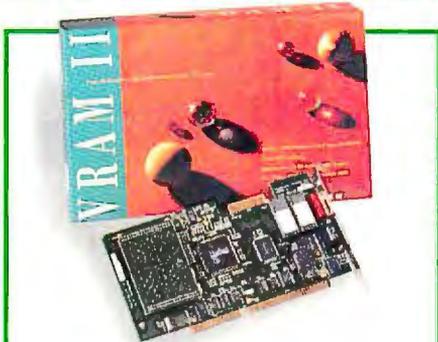
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6556	256k DRAM (100 ns, set of 9)	...	call
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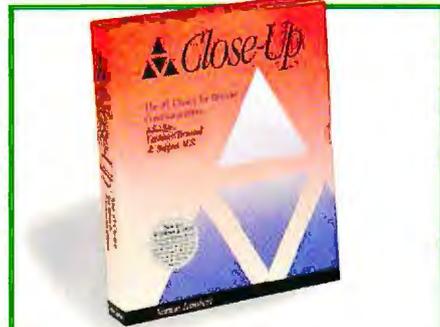
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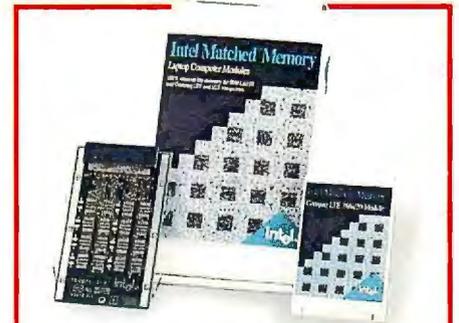
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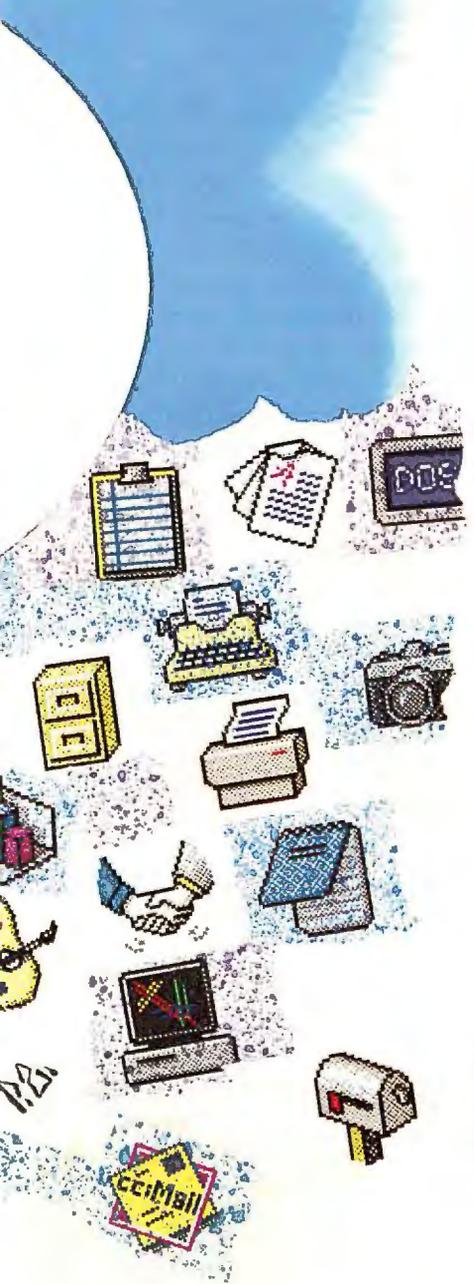
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A sneak peek at the latest,
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WINDOWS 3.1



Diehard DOS users are finding it tougher and tougher to thumb their noses at *Windows*. Although for years Microsoft promised a lot and delivered little, when *Windows 3.0* finally shipped in mid-1990, the face of PC computing changed forever. Seven million copies later, *Windows 3.0* is an established fact; *not* using it is nearly impossible, because it means living without such exceptional applications as *Excel 3.0*, *Ami Pro*, *PageMaker*, and a host of others. With the release of *Windows 3.1*—rumored to become available in two months—Microsoft is making a pitch to win over the holdouts.

Whether it will succeed is a matter of debate. Converts have praised *Windows*' consistent graphical interface, easy mixing of text and graphics, and powerhouse programs that you just can't find in the DOS world. But critics have justly panned the environment for being slow, idiosyncratic, hard to fine-tune, and crash-happy when running DOS applications or connecting to networks. Another stumbling block: *Windows* applications from major data base and communications vendors are still unavailable.

Windows 3.1 addresses some of these gripes and certainly tips the scales further in its favor. It's faster and friendlier, should crash fewer DOS programs, and is smarter about managing memory. Three killer additions make upgrading to *3.1*

PHILIP ANDERSON

ROBERT LUHN

irresistible: the ability to close a crashed application window by typing <Ctrl>-<Alt>-<Delete>; TrueType, a built-in font-scaling system that rivals PostScript; and support for OLE (Object Linking and Embedding), which lets you paste data or graphics into a document and maintain "hot links" with the source application for easy updating.

Cutting-edge goodies are nice, but the interface is what you have to live with every day, and in this area, *Windows 3.1* falls a little flat. According to Microsoft, *3.1* is a "fit-and-finish" upgrade that irons out the wrinkles in *Windows*' interface. For example, dialog boxes have been reworked and standardized and now feature separate scrollable file, directory, and drive lists. Many of the dialog boxes include *tunnels*—buttons that can tap related functions, such as printer setup controls from within Print Manager. Some windows include status lines, and the help system now sports a button bar that makes navigation a one-click affair.

But those expecting a full-blown revamp of the interface will be sorely disappointed. Instead of borrowing the best features from *Norton Desktop for Windows*—a smaller, more nimble File Manager; drag-and-drop file printing and deletion from the desktop that doesn't require you to open and navigate multiple windows; and customizable buttons and menus—*Windows 3.1* mostly maintains the status quo. When asked why, one Microsoft executive joked, "Well, it gives the Nortons of the world something to do."

The new Program Manager and File Manager illustrate Microsoft's failure to follow through on good ideas. Although the Program Manager desktop is largely unchanged, a handy new StartUp group will run programs or load files automatically whenever *Windows 3.1* is loaded. Just open the StartUp window,

drag the desired program icons or data icons into the window, and close it; *3.1* will execute the programs or load the files the next time around. But *3.1* can't automatically position and size application windows, something that third-party utilities have been doing for years.

And unlike with *Norton Desktop*, you can't nest groups within groups—a handy organizational tool.

However, you do get better control over *Windows* programs via an expanded Properties dialog box. You can assign hot keys that quickly load *Windows* or DOS applications. And at last you can specify a different working directory for a

Windows program, so that *PageMaker* on drive D: could automatically look for PM4 files in C:\REPORTS.

DRAG AND DROP—AND LITTLE ELSE

Although users have given *Windows 3.0*'s File Manager consistently low marks, Microsoft has done little to improve this warmed-over *XTree*. The directory tree and file windows have been melded into a single split-screen window, but this only reduces the number of windows you have to fuss with from three to two. Resize the surrounding File Manager window, and you'll probably be forced to drag and scroll the split-screen window back into view. *Windows*' File Manager now combines the directory and file windows. You can also pick file associations from a convenient menu.

In *3.1*, the enhanced "drag-and-drop" feature is File Manager's biggest change. In

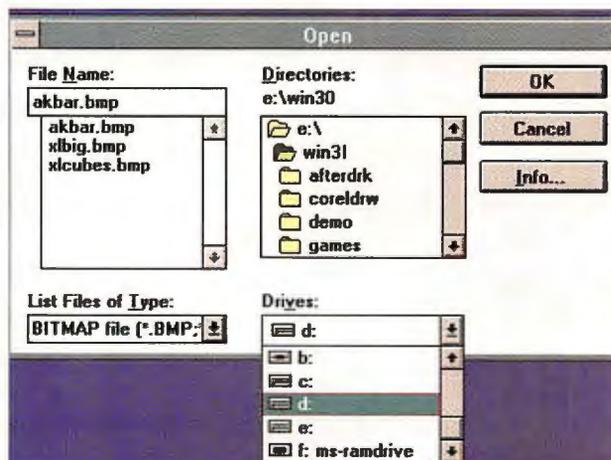
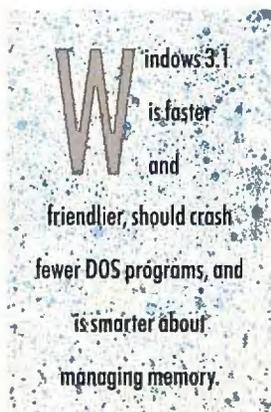
Windows 3.0's File Manager, you can copy or move files by dragging them from one place to another. In *3.1*, drag a data icon out of File Manager and drop it into an application window or onto its minimized icon, and the file opens. Drag it into the Print Manager window, and the file is printed.

In theory, drag-and-drop sounds great. But because File Manager isn't integrated with the Program Manager desktop, printing or running a file means opening, sizing, and scrolling a fistful of windows. Nor does drag-and-drop printing work for data files associated with DOS applications. To see a significantly better File Manager, check out *Norton Desktop*.

OF MEMORY AND MULTITASKING

Like the Volkswagen of yore, *Windows 3.1* may not be any prettier, but a lot of changes have taken place under the hood. Microsoft has focused on trimming the fat from its memory management modules, and that translates into better performance all around and specifically, faster multitasking.

For starters, you won't get 'out of memory' messages nearly as often because Microsoft has doubled the capacity of "System Resources"—*Windows*' bookkeeping function that tracks how many applications, windows, dialog boxes, and so on are open. If you could run only four *Windows* applications



Windows dialog boxes have a new standardized look, with file access broken down by file, extension, directory, and drive.

before, now you can run eight or ten.

The renovated virtual memory system, which uses disk space like RAM when memory is low, is not only faster but can finally be used by DOS applications. Creating a virtual memory swap file is no longer a labyrinthine process; select the 386 Enhanced icon in the Control Panel, click a button or two, and *Windows* suggests how much disk space to set aside and creates the swap file.

Windows communications drivers, long a performance bottleneck, have also been optimized and scan the keyboard far more diligently. So if *Procomm Plus* is downloading a massive file and you really need to return to your spreadsheet, you won't have to wait 5 minutes before *Windows* switches you back.

Multitasking, in short, finally seems workable. Even with the prerelease version of *Windows 3.1* examined here, downloading a 20K file in the background with *Procomm Plus* while globally formatting a 180K *Ami Pro* document is surprisingly fast.

DOS AND DON'TS

Nearly half of all *Windows 3.0* users run DOS programs in the environment—and many have regretted it. The problem is that DOS applications, and even some *Windows* applications, don't always play by the rules when using memory or the screen. The result is frozen keyboards, crashed applications, or even a bum's rush to the DOS prompt.

Windows 3.1 certainly won't be crashproof, but it should be more stable than *3.0*. Thanks to more stringent internal monitoring and recovery routines, *3.1* will keep running if a minor fault occurs and will even identify the culprit. And if a dreaded Unrecoverable Application Error (UAE) pops up, you can now press <Ctrl>-<Alt>-<Delete> to shut down the window and continue with your work. Another nicety: You can finally run DOS graphics programs in a window.

When it comes to configuring DOS programs for *Windows*, however, the news is mixed. *Windows 3.1* will include

more prefab PIF files, and some will be a bit smarter. For example, when you add *1-2-3* to the desktop, *3.1* will ask how you want to configure extended memory, and it will then automatically install the PIF. The bad news: The basic and advanced PIF screens are just as arcane as before, so fine-tuning your DOS program will still be a trial-and-error process. As minor compensation, *3.1* does provide a dozen or so generic icons for DOS applications—a Swiss Army knife, a telephone, and so on.

CUT, PASTE, OLE!

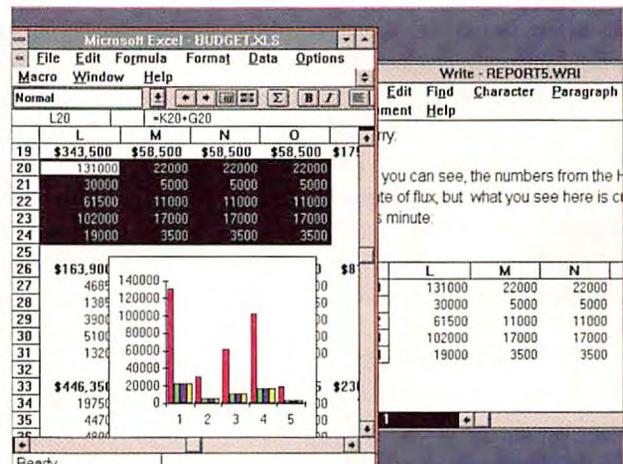
One of the reasons people turn to *Windows 3.0* is so they can cut and paste data easily between applications. Unfortunately, what you can cut and paste depends on the applications—a limit that still applies to *Windows 3.1*.

As in *3.0*, you can move only text between DOS applications. And you can't copy more than a screen's worth of data from a DOS window (a hurdle *Desqview* leaped years ago), and *3.1* still doesn't provide any handy keyboard shortcuts. The story for *Windows* applications isn't much different. Sometimes you can move graphics or formatted text between programs, sometimes you can't. Microsoft blames developers for not supporting the Clipboard, while developers point out that the Clipboard should incorporate a standardized list of formats, such as PCX and TIF, that everyone can agree on. Until that happens, cut-and-paste will remain a quirky affair.

Less quirky is *Windows 3.1*'s use of Object Linking and Embedding. Essentially a very smart cut-and-paste function, and surprisingly easy to use, OLE

is finding its way into scores of new *Windows* applications. Instead of just copying static data from one program to another, you now create live, dynamic links between any two applications that support OLE. For example, highlight numbers in an *Excel 3.0* worksheet, select Copy, switch to an *Ami Pro 2.0* document, and use the Paste Link command. The worksheet numbers appear in *Ami*, but are actually stored in *Excel*. Change the numbers in *Excel*, and they're instantly updated in the *Ami* document. If *Excel* is closed and you need to change the embedded numbers in *Ami*, double-click the numbers, and *Excel* is loaded with the appropriate worksheet, ready for editing.

In keeping with *Windows* tradition, you can establish OLE links in several



Hot-linking two applications takes little more than a cut and paste. In this shot, changing numbers in *Excel* instantly updates linked numbers in a *Write* document and redraws an *Excel* chart.

ways. While in *Ami*, select the Insert Object command, pick an OLE object type from a list (such as an *Excel 3.0* chart), and *Excel* is loaded. Create the chart, and voilà!—it is automatically pasted and linked into *Ami*. You can even create a link after the fact. Double-click a static Paintbrush graphic pasted into a *Winword* document, and *Windows 3.1* will load Paintbrush, let you make edits, establish a hot link, and then pass the changes along. Since linked data is a true object, you can copy it ad nauseam to any OLE-aware appli-

cation and maintain the hot links. This capability is perfect if you need to share frequently updated information, such as a financial worksheet stored on a network server, with many users.

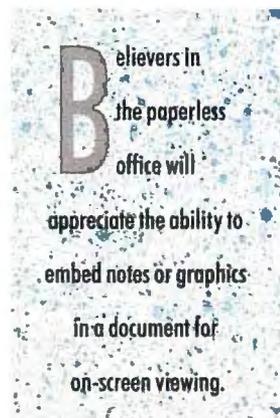
If you believe in the paperless office, you can even embed notes or graphics in a document. For example, run File Manager, drag a Write document icon into an open *Excel* worksheet, and save the worksheet. To read the memo, double-click the embedded Write icon, and the file opens. *Windows 3.1* also supports audio objects—sounds or recorded messages that play back when you click a tiny microphone icon.

Just keep in mind that object linking works only with products that support OLE and that your ability to move or size an embedded object may be severely limited. Want to embed a file within a file? To place a memo inside *Excel 3.0*, drag the document icon from File Manager and drop it into the worksheet. To read the memo, double-click the object.

A TRUER TYPE?

Another innovation is TrueType, a built-in font-scaling technology that's Micro-

soft's answer to PostScript and *Adobe Type Manager*. Thanks to TrueType, *Windows* applications are no longer limited to rigid bit-map fonts in fixed point sizes. As with PostScript, you can dynamically scale TrueType fonts to any size and view the result on screen. But



you don't need a TrueType printer—you can print TrueType fonts on LaserJet, PostScript, and even some dot matrix printers. It's like having ATM built in, without paying \$99 to Adobe. Obviously, if your printer supports TrueType, you can rotate text, create gradients, and tap other special effects. But if you just want snazzy-looking

type, TrueType is all you need.

Microsoft naturally claims that TrueType is faster than PostScript and produces sharper output. The jury is still out, but informal tests show that TrueType looks better at small point sizes and is pretty darn fast. TrueType is also smart enough to download only the fonts you need—and to substitute your printer's fonts if you like. The downside: *Windows 3.1* comes with only four TrueType families (Times, Courier, Helvetica, and Symbol), and the number of TrueType

printers on the market can be counted on the fingers of one hand.

A bigger problem is, like it or not, PostScript is still the PC type standard. Unless you have ATM, *Windows 3.1* will not display Adobe Type 1 fonts, and at press time, support for PostScript Level 2 was still doubtful. Desktop publishers should take note.

WINDOWS MEETS NETWORK

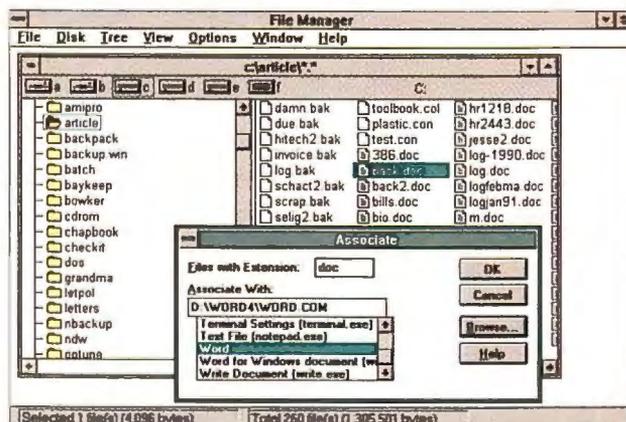
Talk to network managers, and you will find that they hate two things about *Windows*: Tweaking it for a LAN can take months, and there's almost no documentation to help. Version 3.1 should relieve some of these woes, but at this point, Microsoft is a little fuzzy about the details. Microsoft pledges that 3.1 will recognize popular networks at installation time and automatically modify INI settings. 3.1 will also remember what network drives and printers a user is connected to. Microsoft plans to offer a separate Winlogin utility that will allow roving users to tap their setup information from another workstation. But beyond that, Microsoft is mum, so network types should scrutinize the final package carefully before they make their final purchase.

A WINDOWS FOR THE REST OF US?

Windows 3.1 may not win any awards for best upgrade of the year, but it's still a solid piece of work. It's faster, more usable, and more stable than 3.0. And a squadron of enhancements gild the lily—selective install/uninstall of *Windows* files, a faster Print Manager, another 40-plus printers supported, video drivers for super-VGA setups and laptops, and more. Anyone who uses *Windows* should make the jump, if only for the performance boost. *Windows* skeptics should hold their noses, buy a copy of *Norton Desktop*, and join the rest of the PC world.

Granted, Microsoft's failure to address basic user interface problems—especially with File Manager—leaves *Windows 3.1* a little like a race car with one flat tire. If you yearn for airtight DOS handling, true preemptive multitasking, and security features, you'll have to wait for *Windows NT*, the full 32-bit version scheduled to ship at the end of 1992. In the meantime, *Windows 3.1* is still the best way to banish the DOS prompt—and Mac envy. ●

Robert Luhn is a contributing editor for PC World.



Windows' File Manager now combines the directory and file windows. You can also pick file associations from a handy menu.



Excel pioneered the one-click button bar, but in *Windows 3.1*, this feature appears only in the help system.

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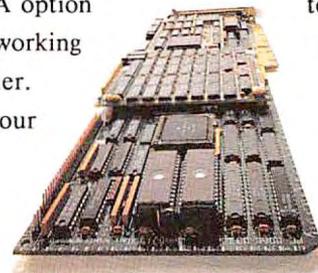
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We think it's further proof that investing in a PowerMate Express Series PC or tower could very well be one of the best decisions you'll ever make.

A decision that will help you survive in today's business environment. And tomorrow's.

Desktop:	NEC PowerMate Express Desktop	COMPAQ Desktop System	AST Express II Tower	Advent
Features:	PowerMate Express Desktop	Compaq Desktop System	AST Express II Tower	Advent
1 # SIMM sockets available	16	4	4	NEC
2 Maximum RAM capacity	64	64	30	AST
3 Internal hard-drive storage capacity	2.7GB	1GB	420MB	NEC
4 Power supply	255W	200W	167W	NEC
5 Internal fans	3	1	1	NEC
6 Sleep-in device (S-1)	Yes	No	No	NEC
7 Sleep-in device (S-2)	Yes	No	No	NEC

Data based on manufacturer supplied specifications.

For more information, call 1-800-NEC-INFO (in Canada, 1-800-343-4418), or NEC FastFacts at 1-800-366-0476, #XPRESS (977377), for immediate literature.

Because  is the way you want to go.

NEC

Susan Lusty, Eric Brown,
Dan Tynan, and Brett Glass

You may be on the road, but you still have deadlines to meet. Luckily, today's notebooks can keep up with the busiest mobile executive, and their accessories aren't far behind. With a portable printer, you can proof documents right in your hotel room. And with a portable fax-modem and a pocket LAN adapter, you can stay in touch with the office and even hook into a network.

Accessories like these are helping to turn the idea of the portable office into reality. Perhaps the most useful attachment of all—especially for *Windows* addicts—is the portable pointing device. In the cramped quarters where most of us do our transit computing, clip-on trackballs and other innovations can make today's hottest software usable, even at 30,000 feet.

This guide provides a comprehensive directory of portable PC accessories, plus tips on how to select the right products for your applications. And with the right mix of gadgets, you could have less to catch up on the next time you return home to the office.

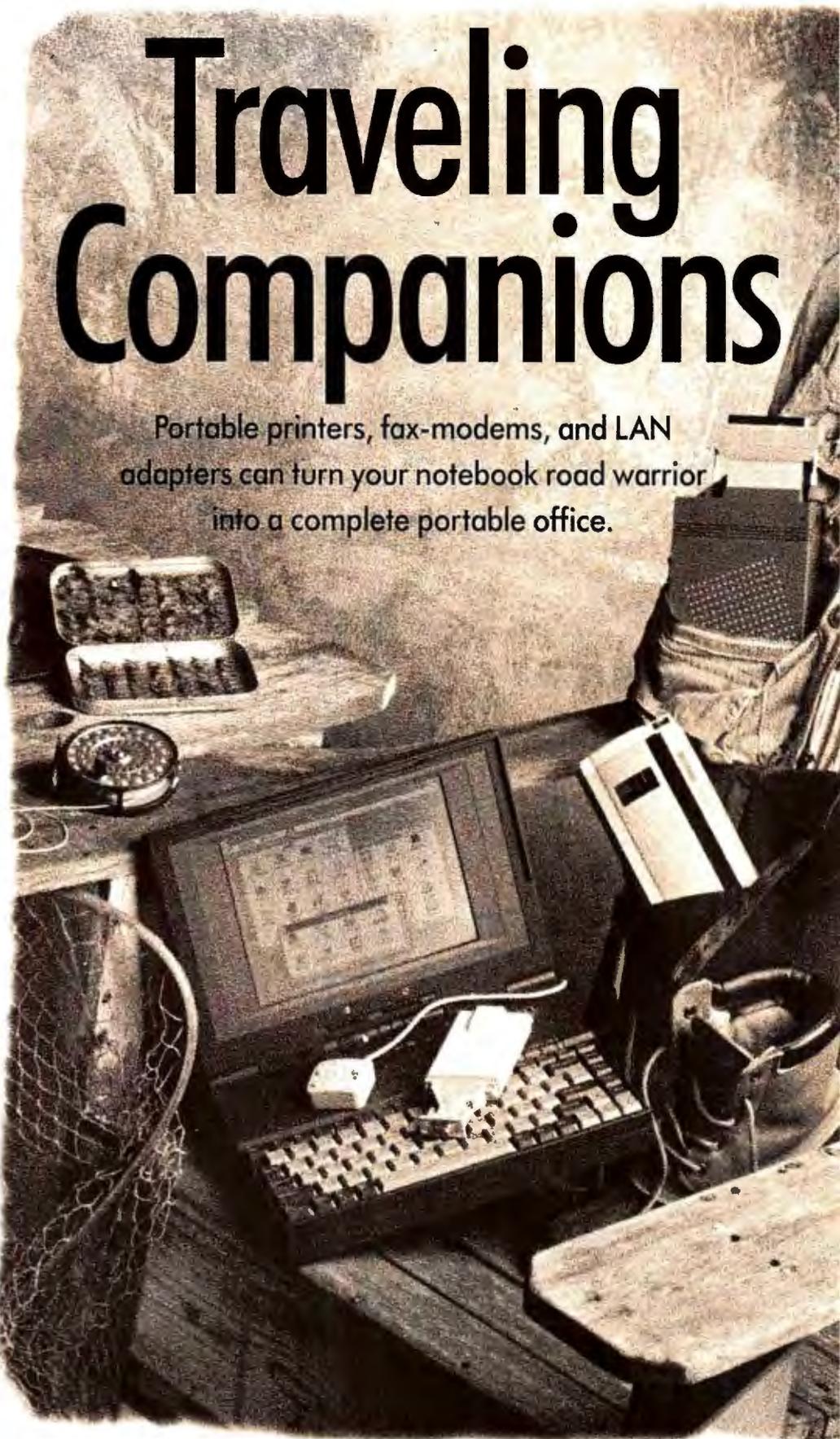
Ready to Print

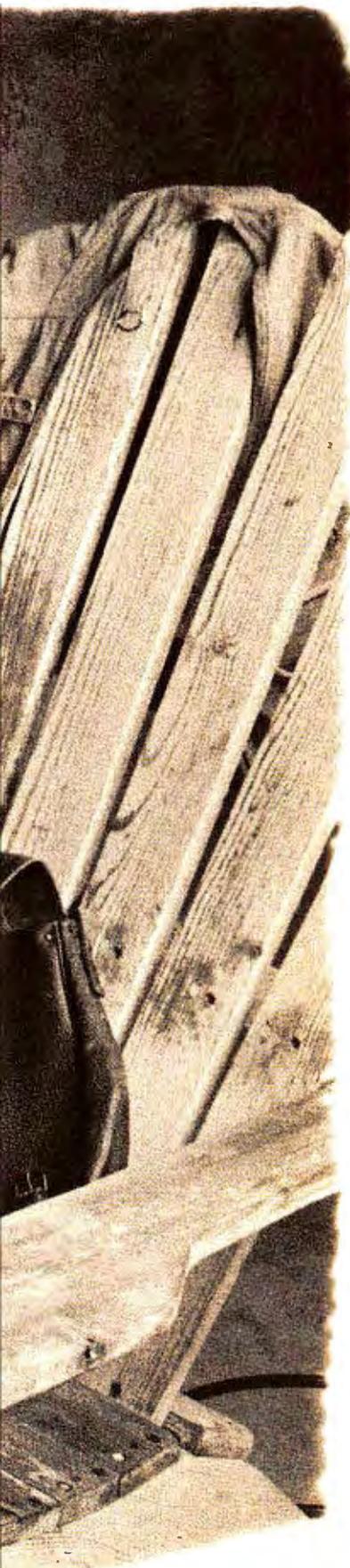
Portable printers let you churn out on-the-spot invoices, contracts, presentation materials—anything that can't wait till you get back to the office. Today you can find a pack of mobile printing devices that weigh less than 10 pounds and run on battery or AC power.

Which type of printer is right for you? An impact printer is the only type that can handle multipart forms, so if you often print documents such as invoices, a dot matrix portable is your best choice. To update presentation overheads, you'll need a high-reso-

Traveling Companions

Portable printers, fax-modems, and LAN adapters can turn your notebook road warrior into a complete portable office.





lution ink jet or thermal that can handle transparencies .

When you're printing on the go, output quality takes a backseat to portability. The printer should slip easily into your briefcase alongside your notebook PC. Odds are you'll be doing your printing within reach of an electrical outlet, but if you *do* need to print on the fly, look for a rechargeable battery that'll produce at least 30 pages before it runs down.

When it comes to fonts, most portable printers travel light. At minimum, you should demand two typefaces in three sizes, plus at least 150K of RAM to download two or three typefaces. A printer's capability to add font cartridges is a welcome extra. Look for common typefaces such as Helvetica and Times Roman, and always examine print samples before you buy.

Speedy printout is something you'll have to do without. The fastest unit listed, the Mannesmann Tally MT 735, will spit out a page of text in about 20 seconds; the other printers can take 3 minutes or longer. All except the Itron handle letter- and legal-sized paper; the top ones also print labels, envelopes, and transparencies. And unless you enjoy feeding your printer one page at a time, look for a model with a paper feeder that holds at least 30 sheets.

To guarantee that your software will run with these printers, all of them except the Itron emulate the popular IBM Proprinter; most also offer Epson emulations. Look for one that lets you choose emulations via software or front-panel controls instead of DIP switches. The Mannesmann Tally MT 735 is the only printer here that offers HP DeskJet and HP LaserJet II emulations.

Travel can do bad things to good printers. To avoid disasters, choose one with a high

durability rating (measured as mean time between failures, or *MTBF*) and demand at least a one-year warranty. Many companies offer 24-hour turnaround on repairs.

Communication A-Go-Go

Though getting away from the office may seem like a relief sometimes, no one on the road profits from being cut off from it. A portable modem or fax-modem is one of the best ways to ensure you'll stay in touch.

Almost every laptop comes with a slot for an internal

No one profits
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modem, but because each laptop has a different expansion bus, you're usually limited to a proprietary product sold by the laptop vendor. If you own a popular laptop model like a Compaq or a Toshiba, you may find some less expensive, more feature-rich options from third-party vendors.

The greatest selection, hottest features, and best bargains are found among external portable modems. These lightweight pocket modems usually fit easily into your laptop carrying case, and because they plug into any serial port, you can easily use them with a

desktop PC. Most external modems also provide helpful status lights and speakers.

In this buyers' guide we've listed only external pocket units that weigh 10 ounces or less (without batteries), operate at 2400 baud or faster, and are Hayes compatible.

Fax support is optional. If you need it, a send/receive fax is your best choice, but send-only is usually cheaper. All the fax-modems listed are Group III compatible, so they can exchange faxes with any fax board and fax machine. Some also support the new Class II standard. If your fax-modem is Class II compatible, by mid-1992 you won't be limited to only the fax software bundled with your modem; you'll be able to use a variety of packages. Also look for a fax redirection feature that can let you hijack print jobs and convert them to fax on the spot.

Most portable modems are powered by batteries (or an AC adapter), or else they draw power from the phone line and the attached PC. The line- and serial-powered systems are considerably lighter, smaller, and less expensive, and you don't have to replace spent batteries. However, these little modems do suck the life out of your laptop's battery.

If the modem has built-in error correction and data compression based on MNP-5 or the faster V.42bis standard, you should be able to double or triple your effective data throughput respectively when communicating with modems that support the same standards. Modems that implement data compression via software, however, are substantially slower than those that implement it in hardware.

A few vendors have even been able to squeeze V.32 circuitry into a 10-ounce box, letting you swap data at 9600 baud or faster. If you don't have

MODEMS



Manufacturer	Product	Price	STANDARD FEATURES			
			Weight without battery (oz.)	Dimensions* (inches)	Baud rate	AC/battery powered
ARCHTEK AMERICA	2400P	\$99	7.2	4.8x1.3x1.3	2400	Y ²
	9624PXB	\$299	7	4.8x2.8x1	2400	Y ²
	9624PXB-S	\$359	7	4.8x2.8x1	2400	Y ²
BEST DATA PRODUCTS	Smart One Traveler 9624PF	\$249	7	5x2.8x1.2	2400 ³	Y
COMPUTER PERIPHERALS	Viva 2400 pocket	\$139	6.5	4.7x2.7x1	2400	Y
	Viva 2496 pocket	\$249	6	4.7x2.7x1	2400 ³	Y
	Viva 2496 V.42bis pocket fax	\$299	6	4.7x2.7x1	2400 ³	Y
E-TECH RESEARCH	P9696MX	\$745	6.5	4.7x2.5x1.2	9600	Y
	P2400MX	\$345	6.5	4.7x2.5x1.2	2400	Y
EVEREX SYSTEMS	Carrier 24/96	\$399	6.8	6.3x3.5x0.5	2400 ³	Y
GALAXY NETWORKS	Pocket Fax/Modem	\$199	8.6	4x2.5x1	2400	Y
GVC TECHNOLOGIES	FMM-9624V Pocket Fax Modem	\$299	6.5	4.8x2.4x1	2400 ³	Y
HAYES MICROCOMPUTER PRODUCTS	Pocket Edition 2400	\$179	3	3x2x1	2400	²
IMAGE COMMUNICATIONS	Twincom Commuter	\$189	10	4x2x1	2400 ³	⁴
LOGICODE TECHNOLOGY	Quicktel Pocket Modem	\$299	5	4.5x2.3x1.1	2400 ³	²
MACRONIX	Maxlite/PC	\$499	5	4.8x3x1	2400 ³	Y
	Maxlite 96/PC	\$649	5	4.8x3x1	9600	Y
	Maxlite 144/PC	\$699	5	4.8x3x1	14,400 ³	Y
MEGAHERTZ	P224SFM	\$309	6	3.3x2.3x1	2400	Y
	P224FMV	\$399	5	3.3x2.3x1	2400	Y
	P224SF	\$199	5	3.3x2.3x1	2400	²
MICROCOM	MicroPorte 1042	\$649	10	4.6x2.8x1.4	9600	Y
	MicroPorte 542	\$449	10	4.6x2.8x1.4	9600	Y
	MicroPorte 1032	\$849	10	4.6x2.8x1.4	14,400	Y
MICRO ELECTRONIC TECHNOLOGIES	9624 PF	\$399	6	4.8x2.8x1	2400 ³	Y
OMNITEL	2496p+	\$315	4.8	5x2.5x1	2400	Y
PRACTICAL PERIPHERALS	PPM 2400 V.42bis SendFax	\$299	4	3x2.3x1	2400	Y
	Practical Pocket Modem	\$159	4	3x2.3x0.8	2400	²
SOLECTEK	Pocket Fax Modem FM-D	\$299	3.5	4.5x2.8x1.3	2400 ³	Y
	Pocket Fax Modem FM-W	\$349	3.5	4.5x2.8x1.3	2400 ³	Y
STARLOGIC	Pocket Fax/Modem	\$199	7	5x2.5x1	2400 ³	Y
	Pocket Modem	\$99	4.5	5x2.5x0.8	2400	Y
SUNHILL NIC	Datronics Discovery 2496PF	\$256	4	4.6x2.5x1.1	2400 ³	Y
	Datronics Discovery 2496PX	\$296	4	4.6x2.5x1.1	2400 ³	Y
TELEBIT	QBlazer	\$745	8	2.4x2.4x2.3	9600	Y ²
U.S. ROBOTICS	Worldport 9600	\$699	5.4	4.8x2.8x1	9600	Y
	Worldport 2400 v.42bis	\$349	5.4	4.8x2.8x1	2400	Y
	Worldport 2400	\$229	5.4	4x2.4x1	2400	Y
	Worldport 2496 Fax/Data	\$499	5.4	4.8x2.8x1	2400 ³	Y
VOCAL TECHNOLOGIES	Stowaway 2400	\$150	6	2x2x0.7	2400	²
ZOLTRIX	Pocket 2400p	\$99	4.5	5.5x2.5x1	2400	Y
	ZoCom pocket 96/24	\$259	4.1	5.5x2.5x1	2400	Y
ZOOM TELEPHONICS	FaxModem PKT	\$169	5.3	4.7x2.5x1	2400 ³	⁵

¹ S = software, H = hardware, N = none.
² Serial and line powered.
³ 9600-baud fax.

⁴ AC adapter powered only.
⁵ Battery powered only.

a communications package, you might look for a modem that comes with bundled software, although third-party packages usually offer more features.

Have Mouse Will Travel

Many of us are addicted to mice. But if you're in a tight space, where can you find the room? Most portable pointing devices solve this problem by

using a trackball ranging from 0.3 to 1.5 inches in diameter. However, there are more creative solutions, such as the Suncom IController, which is a minijoystick, and the Appoint

Mouse-Pen Professional, a penlike device with a kind of trackball in its point.

Choose an input device that feels comfortable and gives you the most control.

**ERROR CORRECTION/DATA
COMPRESSION PROTOCOLS**

FAX FEATURES

MNP-5 ¹	V.42 ¹	V.42bis ¹	V.32 ¹	Class II	Fax receive	LaserJet redirection	Epson FX redirection	Bundled software	Speaker	Dual phone plugs	Warranty	Reader service number
S	N	N	N	N	N	N	N	Comit	Y	Y	2 years	766
S	N	N	N	Y	Y	Y	Y	BitFax, Comit	Y	Y	2 years	767
H	H	H	H	Y	Y	Y	Y	BitFax, Comit	Y	Y	2 years	768
H	S	S	N	N	Y	Y	Y	Mirror Fax or QuickLink II	Y	Y	2 years	769
N	N	N	N	n/a	n/a	n/a	n/a	Procomm	Y	Y	5 years	770
N	N	N	N	Y	Y	Y	Y	Quick Link	Y	Y	5 years	771
H	H	H	H	Y	Y	Y	Y	QuickLink	Y	Y	5 years	772
H	H	H	H	Y	Y	Y	Y	BitFax	Y	Y	2 years	773
H	H	H	N	Y	Y	Y	Y	BitFax	Y	Y	2 years	774
H	N	N	N	Y	Y	N	Y	EFax, Procomm	Y	Y	2 years	775
N	N	N	N	N	Y	Y	Y	QuickLink	Y	Y	2 years	776
H	H	H	N	Y	Y	Y	Y	QuickLink II	Y	Y	5 years	777
N	N	N	N	n/a	n/a	n/a	n/a	Smartcom EZ	N	Y	2 years	778
H	H	H	N	N	Y	Y	Y	QuickLink II	Y	Y	1 year	779
S	S	S	N	N	Y	Y	Y	QuickLink II	N	Y	lifetime	780
H	N	N	N	Y	Y	Y	N	FaxTalk, WinFax, Comit	Y	N	5 years	781
H	H	H	H	Y	Y	Y	N	FaxTalk, WinFax, Comit	Y	N	5 years	782
H	H	H	H	Y	Y	Y	N	FaxTalk, WinFax, Comit	Y	N	5 years	783
H	H	H	N	Y	N	N	Y	MTEZ	Y	N	5 years	784
H	H	H	N	Y	Y	N	Y	MTEZ	Y	N	5 years	785
N	H	H	N	Y	N	N	Y	MTEZ	Y	N	5 years	786
H	H	H	N	n/a	n/a	n/a	n/a	Carbon Copy Plus	Y	N	1 year	787
H	H	H	N	n/a	n/a	n/a	n/a	Carbon Copy Plus	Y	N	1 year	788
H	H	H	H	n/a	n/a	n/a	n/a	Carbon Copy Plus	Y	N	1 year	789
H	H	H	N	Y	Y	Y	Y	QuickLink II	Y	Y	5 years	790
S	N	N	N	Y	Y	Y	Y	BitFax, Procomm	Y	Y	2 years	791
H	H	H	N	Y	N	Y	Y	QuickLink II	Y	N	lifetime	792
N	S	N	N	n/a	n/a	n/a	n/a	MTEZ	Y	N	lifetime	793
S	N	S	N	N	Y	N	Y	FaxTalk	Y	Y	2 years	794
S	N	S	N	N	Y	N	Y	WinFax	Y	Y	2 years	795
S	N	N	N	Y	Y	N	N	BitCom, BitFax	Y	Y	1 year	796
S	N	N	N	N	N	N	N	BitCom	Y	N	1 year	797
N	N	N	N	Y	Y	Y	Y	abcFax	Y	Y	1 year	798
H	H	H	N	Y	Y	Y	Y	abcFax	Y	Y	1 year	799
H	S	S	S	n/a	n/a	n/a	n/a	MagicSoft	Y	N	2 years	800
H	N	N	H	n/a	n/a	n/a	n/a	MTEZ	Y	Y	2 years	801
H	H	H	N	n/a	n/a	n/a	n/a	MTEZ	Y	Y	2 years	802
N	N	N	N	n/a	n/a	n/a	n/a	Carbon Copy Plus	Y	N	2 years	803
H	H	H	N	N	Y	Y	Y	Worldport Fax SW	Y	Y	2 years	804
N	N	N	N	n/a	n/a	n/a	n/a	N	N	N	3 years	805
S	N	N	N	n/a	n/a	n/a	n/a	BitCom	Y	Y	1 year	806
S	N	N	N	Y	Y	N	N	BitFax, BitCom	Y	Y	1 year	807
S	S	S	N	N	Y	Y	Y	QuickLink II	Y	Y	7 years	808

For more information about all products in this table, circle reader service no. 911.

Many have a drag-lock option. This feature is necessary on most small devices because it's often difficult to hold down the primary button while rolling the cursor around the screen.

Most have LEDs to indicate that you're in drag-lock mode.

Connector cord lengths start at 26 inches, and most have extensions. All are Microsoft Mouse compatible, so

you can plug in and start clicking straight out of the box.

No Place Like Home

What about when you need to hook up to the LAN? Since

notebooks and palmtops lack slots, it's impossible for you to install an ordinary network interface card.

Luckily, seven companies have crafted LAN adapters

that attach to any PC-compatible parallel port. An eighth, Megahertz Corporation, offers adapters that connect to the proprietary bus port on the back of certain portables, providing faster performance.

Most of these units are the size of a pack of cigarettes. The IQ Technologies p.LAN adapters are bigger: 6 inches by 7 inches by 2 inches. Their cases sport LEDs that let you monitor network activity, and include a "pass-through" parallel port, which lets you use a parallel printer and the LAN simultaneously. The Intellicom and Xircom models also let you use both a printer and the LAN, but to print with the Xircom you'll need a \$95 parallel port multiplexer option.

The Megahertz External Ethernet Adapter is compatible with drivers for the popular Western Digital 8003 EB network card, so you can use any driver intended for that card. All the other adapters require you to load software drivers for specific networks.

PRINTERS



Manufacturer	Product	Price	Type	Weight with battery (lbs.)	Dimensions (inches)	Maximum resolution (dpi)
AXONIX	Milwrite	\$1395	dot matrix	7.5	10x14x4	240x240
CANON	BJ-10ex	\$499	bubble jet	4.6	12.3x8.5x1.8	360x360
CITIZEN AMERICA	PN48	\$469	thermal fusion	2.5	11.7x3.5x2	360x360
EASTMAN KODAK	Diconix 180si	\$399 ³	ink jet	3.5	6.5x10.8x2	192x192
ITRON	RP42	\$1095	dot matrix	3.1	7.8x5.9x3.1	300x300
MANNESMANN TALLY	MT 735	\$1295	thermal transfer	8.3	11.4x8.7x2.3	300x300
SEIKOSHA AMERICA	Seikosha LT-20	\$499	dot matrix	6.4	14.6x11.3x2	360x180
STAR MICRONICS	Starjet SJ-48	\$499	ink jet	4.6	8.5x12.2x1.7	360x360
TOSHIBA	ExpressWriter 201	\$499	thermal transfer	2.5	1.7x11.9x3.1	180x180

¹ P = parallel, S = serial.
² Option costs extra.

³ Serial version \$419.
⁴ RP42 uses special paper.

The Xircom products offer the widest selection of software drivers, while the Accton RingPocket supports token ring network card drivers plus a variety of others. The adapters table lists the LAN operating systems that each model supports, but consult the

manufacturer for the latest, most accurate information.

Portable LAN adapters are now an attractive alternative to expensive docking stations. If you need to use your laptop as a desktop PC—or just want to get files on and off the LAN quickly while you're at the

office—one of these products may be an ideal solution. ☺

Susan Lusty and Jeff Bertolucci are assistant editors, Eric Brown is a senior editor, and Dan Tynan and Brett Glass are contributing editors for PC World.

WHERE TO BUY

Accton Technology Corp.
46750 Fremont Blvd.
#104
Fremont, CA 94538
800/926-9288,
510/226-9800

Appoint
7026 Koll Center Pkwy.
#230
Pleasanton, CA 94566
800/448-1184,
510/417-0614 (fax)

Archtek America Corp.
18549 E. Gale Ave.
City of Industry, CA
91748
818/912-9800

Axonix Corp.
1214 Wilmington Ave.
Salt Lake City, UT 84106
800/866-9797,
801/466-9797

Best Data Products, Inc.
9304 Deering Ave.
Chatsworth, CA 91311
800/632-2378,
818/773-9600 (CA)

Canon USA, Inc.
One Canon Plaza
Lake Success, NY
11042
800/848-4123,
516/488-6700

Citizen America Corp.
2450 Broadway #600
P.O. Box 4003
Santa Monica, CA
90411-4003
800/477-4683

CompuLAN Technology, Inc.
180 Charcot Ave.
San Jose, CA 95131
800/486-8810,
408/954-8299 (fax)

Computer Peripherals, Inc.
667 Rancho Conejo Blvd.
Newbury Park, CA
91320
800/854-7600,
805/499-5751

D-Link Systems, Inc.
5 Musick
Irvine, CA 92718
714/455-1688,
714/455-1779 (BBS)

Eastman Kodak Co.
901 Elmgrove Rd.
Rochester, NY 14653
800/344-0006

E-Tech Research
3525 Ryder St.
Santa Clara, CA 95051
800/328-5538,
408/730-2488 (fax)

Everex Systems, Inc.
48431 Milmont Dr.

Fremont, CA 94538
800/628-3837

Galaxy Networks
9348 De Soto Ave.
Chatsworth, CA 91311
818/998-7851,
818/998-1758 (fax)

GVC Technologies
99 Demarest Rd.
Sparta, NJ 07871
800/289-4821

Hayes Microcomputer Products, Inc.
P.O. Box 105203
Atlanta, GA 30348-5203
404/441-1617

IBM Corp.
1133 Westchester Ave.
White Plains, NY 10604
800/426-9292

Image Communications
6 Caesar Pl.

Moonachie, NJ 07074
201/935-8880,
201/935-6548 (fax)

Intellicom, Inc.
20415 Nordhoff St.
Chatsworth, CA 91311
818/407-3900

IQ Systems Corp.
22032 23rd Dr. SE
Bothell, WA 98021
800/227-2817,
206/483-3555

Itron
E. 15616 Euclid
Spokane, WA 99216
800/635-5461,
509/924-9900

Logicode Technology, Inc.
1817 DeHavilland Dr.
Newbury Park, CA
91320
805/499-4443,
805/499-8588 (fax)

SPEED

RAM buffer standard/maximum	Draft mode (cps)	Near letter quality (cps)	Letter quality (cps)	Ports ¹	Resident fonts	Supports downloaded fonts	Emulations	Paper capacity (sheets)	Built-in sheet feeder	Prints envelopes	Prints transparencies	Warranty (months)	Reader service number
2MB/8MB	240	48	n/a	P,S	4	Y	FX	1	²	Y	Y	24	705
37K/37K	83	83	83	P	7	Y	LQ-510	1	²	Y	Y	12	706
4MB/4MB	80	n/a	80	P	2	Y	LQ-510	1	N	Y	Y	12	707
2MB/2MB	180	n/a	36	P,S	4	N	FX85	1	N	N	Y	12	708
1MB/1MB	100	100	n/a	S	1	Y	LQ-510	⁴	N	N	N	3	709
1MB/1MB	796	796	796	P	14	Y	LQ-850	80	Y	N	Y	12	710
1MB/12MB	180	n/a	60	P	1	Y	none	50	Y	N	N	24	711
28K/28K	166	166	166	P	2	Y	LQ-850	1	²	Y	N	24	712
512K/512K	53	63	42	P	2	Y	LQ-2550	1	N	Y	Y	24	713

For more information about all products in this table, circle reader service no. 908.

INPUT DEVICES

CONNECTOR



Manufacturer	Product	Price	Serial	PS/2	Number of keys	Trackball diameter (inches)	Resolution (dpi)	Drag-lock option	Laptop attachment	User-adjustable speed/sensitivity ¹	Number of drivers available	Utilities available	Warranty	Reader service number
APPOINT	MousePen Professional	\$99	Y	Y	2	0.4	150	N	n/a	H,S	2	Menu Maker	1 year	757
	Thumbelina	\$99	Y	Y	2	0.3	150	Y	bracket	S	2	none	1 year	757
IBM	IBM PS/2 Trackpoint	\$159	N	Y	4	1.3	200	Y	n/a	S	1	control panel menus	1 year	758
LOGITECH	TrackMan Portable	\$169	Y	Y	3	1	200	Y	bracket	S	2	Windows hot keys	life-time	759
MICROSOFT	BallPoint Mouse	\$175	Y	Y	4	1.1	400	N	bracket	S	2	mouse menus	1 year	760
MICROSPEED	MicroTrac	\$90	Y	Y	3	0.8	400	Y	dual lock	S	1	KeyMap, Precision Pointer	life-time	761
MOUSE SYSTEMS	The Little Mouse/PC	\$135	Y	Y	2	n/a	300	N	n/a	S	2	Ultra-Res Software, Designer DOS	life-time	762
SUNCOM TECHNOLOGIES	IController	\$100	Y	N	3	n/a	200 ²	N	dual lock	H	1	none	5 years	763

¹ S = software, H = hardware. ² Approximately.

For more information about all products in this table, circle reader service no. 910.

WHERE TO BUY

Logitech, Inc.
6505 Kaiser Dr.
Fremont, CA 94555
800/231-7717,
510/795-8500

Macronix, Inc.
1348 Ridder Park Dr.
San Jose, CA 95131
800/468-4629,
408/453-8088

Mannesmann Tally
P.O. Box 97018
8301 S. 180th St.
Kent, WA 98064-9718
800/843-1347,
206/251-5524

Megahertz Corp.
4505 S. Wasatch Blvd.
Salt Lake City, UT 84124
800/527-8677,
801/272-6000

Microcom, Inc.
500 River Ridge Dr.
Norwood, MA 02062
800/822-8224,
617/551-1000

The Briefcase Office



Ever been stuck at the airport or in a hotel lobby, working on a spreadsheet on your notebook computer and wishing you had access to files back on your office PC? Sure, you could use your modem to make the connection—if you could find a phone jack.

The Business Center may be the answer. It's a 20-pound briefcase containing a Tandon 386SX notebook, a Motorola cellular telephone, a Citizen portable printer, a fax-modem, and all the cables and connectors necessary to give you truly portable computing. Targeted at salespeople, technicians, and executives, the Business Center, from Texas-based Automated Computer Technology (ACT), costs \$6995 with the printer and \$6595 without. ACT expects street prices to fall under \$6000. NEC offers a comparable product that costs a bit less—\$5599—but its unit lacks a portable printer.

Designed specifically as a docking station for its internal components, the Business Center case features a single plug that enables you to run or recharge the notebook PC, the cellular phone, and the printer by using a single AC outlet. Its rechargeable battery provides at least 2 hours of portable power. If you're in a car, you can use the 12-volt cigarette lighter to power the Business Center (the cabling is included).

Though the concept is appealing, the execution still needs work: The bulky briefcase is a hassle to carry around, and since you can't remove the Motorola cellular phone from the briefcase, you can't use it separately. However, ACT says it'll soon introduce a version of the Business Center that has a removable NEC cellular phone. That will certainly help, though the real dream for the road-hardened businessperson would be a lightweight notebook complete with an internal fax-modem and a small, detachable cellular phone. Still, if you need a portable office now, the Business Center fills the bill. —Jeff Bertolucci

Business Center

\$6595, with printer \$6995; Automated Computer Technology; 800/521-9237, 713/568-1778

ETHERNET ADAPTERS



Manufacturer	Product
ACCTON TECHNOLOGY	EtherPocket
COMPULAN TECHNOLOGY	E50, ET50, E50U
D-LINK SYSTEMS	Ethernet Pocket LAN Adapter
INTELLICOM	TPair-PNA
IQ TECHNOLOGIES	p.LAN
MEGAHERTZ	External Ethernet Adapter
SOLECTEK	LAN-CX, LAN-10BT
XIRCOM	Pocket Ethernet

¹ Extra-cost option.

ARCNET ADAPTERS

Manufacturer	Product
COMPULAN TECHNOLOGY	A50
D-LINK SYSTEMS	ARCnet Pocket LAN Adapter
IQ TECHNOLOGIES	p.LAN
SOLECTEK	LAN-ARC
XIRCOM	Pocket ARCnet

¹ Extra-cost option.

TOKEN RING ADAPTERS

Manufacturer	Product
ACCTON TECHNOLOGY	RingPocket
IQ TECHNOLOGIES	p.LAN
MEGAHERTZ	External Token Ring Adapter
XIRCOM	Pocket Ethernet

¹ 16 Mhz only.

² Extra-cost option.

WHERE TO BUY

Micro Electronic Technologies, Inc.

35 South St.
Hopkinton, MA 01748
800/766-7466,
508/435-6481 (fax)

Microsoft Corp.

One Microsoft Way
Redmond, WA 98052
206/882-8080

MicroSpeed Inc.

44000 Old Warm
Springs Blvd.
Fremont, CA 94538

800/232-7888,
510/490-1403

Mouse Systems Corp.

47505 Seabridge Dr.
Fremont, CA 94538
510/656-1117,
510/656-4409 (fax)

OmniTel, Inc.

3500 W. Warren Ave.
Fremont, CA 94538
510/490-2202,
510/490-1285 (fax)

INTERFACE

COMPATIBLE NETWORKS

Price	Thin ethernet	10BaseT	AUI	NetWare	NETBIOS	TCP/IP	PC-NFS	Banyan VINES	NDIS	DECnet	Other	Allows parallel printing	Reader service number
\$399	Y	Y	N	Y	Y	Y	Y	N	Y	N	Y	N	688
\$259	Y	Y	Y	Y	N	N	N	N	N	N	N	N	689
\$495	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	690
\$399	N	Y	N	Y	N	N	N	N	Y	N	N	Y	691
\$595	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	692
\$599	Y	1	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	693
\$450	Y	1	N	Y	Y	Y	Y	Y	Y	N	N	N	694
\$495	Y	1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	695

For more information about all products in this table, circle reader service no. 905.

CABLING SYSTEMS

COMPATIBLE NETWORKS

Price	Coaxial	Twisted pair	NetWare	NETBIOS	TCP/IP	PC-NFS	Banyan VINES	NDIS	DECnet	Other	Allows parallel printing	Reader service number
\$229	Y	Y	Y	N	N	N	N	N	N	N	N	696
\$295	Y	Y	Y	Y	N	N	N	N	N	Y	N	697
\$495	Y	Y	Y	N	N	N	N	N	N	N	Y	698
\$360	Y	N	Y	Y	Y	N	Y	Y	N	N	N	699
\$395	Y	Y	Y	Y	N	N	N	Y	N	Y	1	700

For more information about all products in this table, circle reader service no. 906.

CABLING SYSTEMS

COMPATIBLE NETWORKS

Price (4 MHz)	Price (16 MHz/4 MHz)	Type 1 cable	Type 3 cable	NetWare	NETBIOS	TCP/IP	PC-NFS	Banyan VINES	NDIS	DECnet	Allows parallel printing	Reader service number
n/a	\$799	Y	Y	Y	N	N	N	N	Y	N	N	701
\$845	\$995	Y	Y	Y	Y	Y	N	Y	Y	N	Y	702
n/a	\$999	Y	1	Y	Y	N	N	N	N	N	Y	703
\$845	\$895	Y	Y	Y	Y	Y	Y	Y	Y	Y	2	704

For more information about all products in this table, circle reader service no. 907.

Practical Peripherals
31245 La Baya Dr.
Westlake Village, CA
91362
800/442-4774,
818/706-2474 (fax)

Seikosha America
10 Industrial Ave.
Mahwah, NJ 07430
201/327-7227

Solectek Corp.
6370 Nancy Ridge Dr.
#109

San Diego, CA 92121
800/437-1518,
619/457-2681 (fax)

Star Logic, Inc.
238 E. Caribbean Dr.
Sunnyvale, CA 94089
800/800-5632,
408/747-0954 (fax)

Star Micronics America, Inc.
420 Lexington Ave.
#2702
New York, NY 10170
212/986-6770

Suncom Technologies
6400 W. Gross Point Rd.
Niles, IL 60648
708/647-4040,
708/647-7828 (fax)

Sunhill NIC, Inc.
500 Andover Park E
Seattle, WA 98188
206/575-4131

Telebit Corp.
1315 Chesapeake Terr.
Sunnyvale, CA 94089
800/835-3248

U.S. Robotics, Inc.
8100 N. McCormick Blvd.
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Santa Clara, CA 95954
408/980-5181,
408/980-8709 (fax)

Xircor, Inc.
26025 Mureau Rd.
Calabasas, CA 91302

818/878-7600,
818/878-7630 (fax)

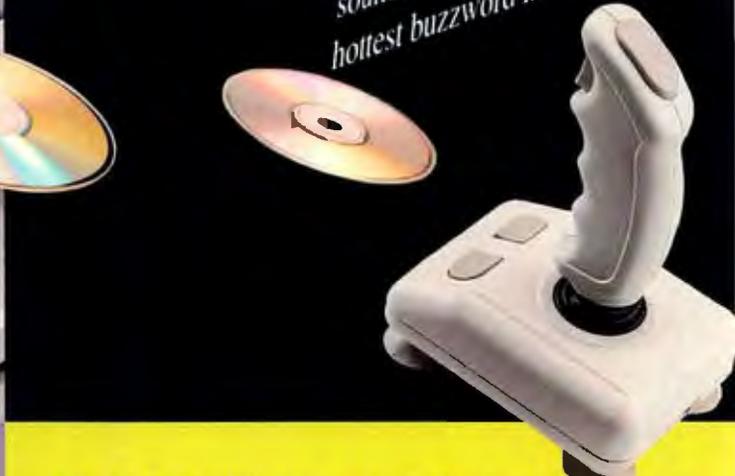
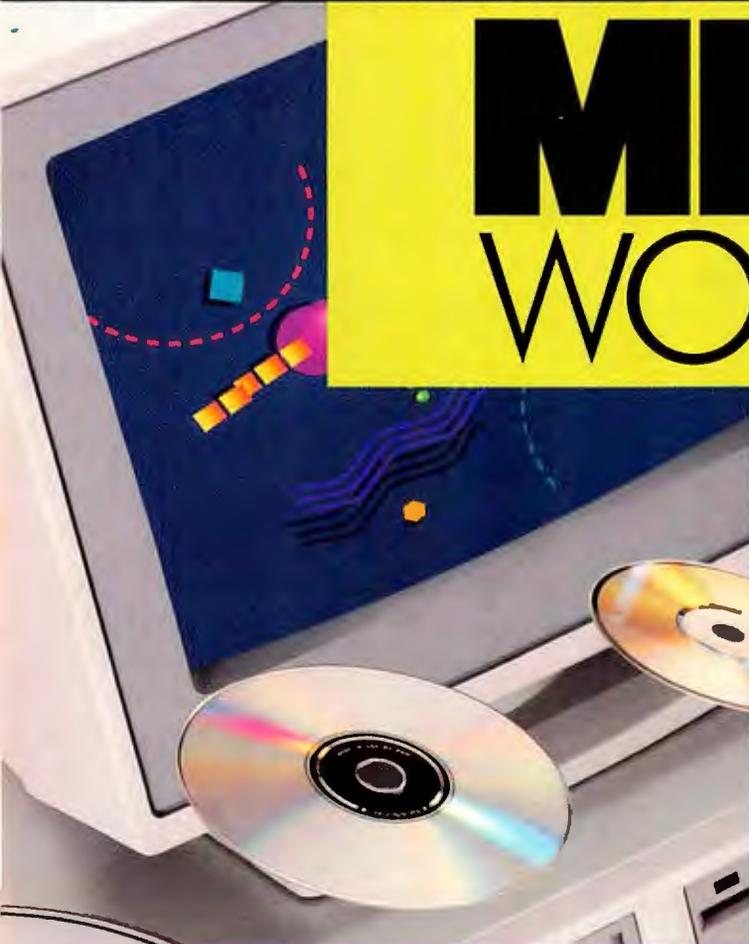
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Fremont, CA 94538
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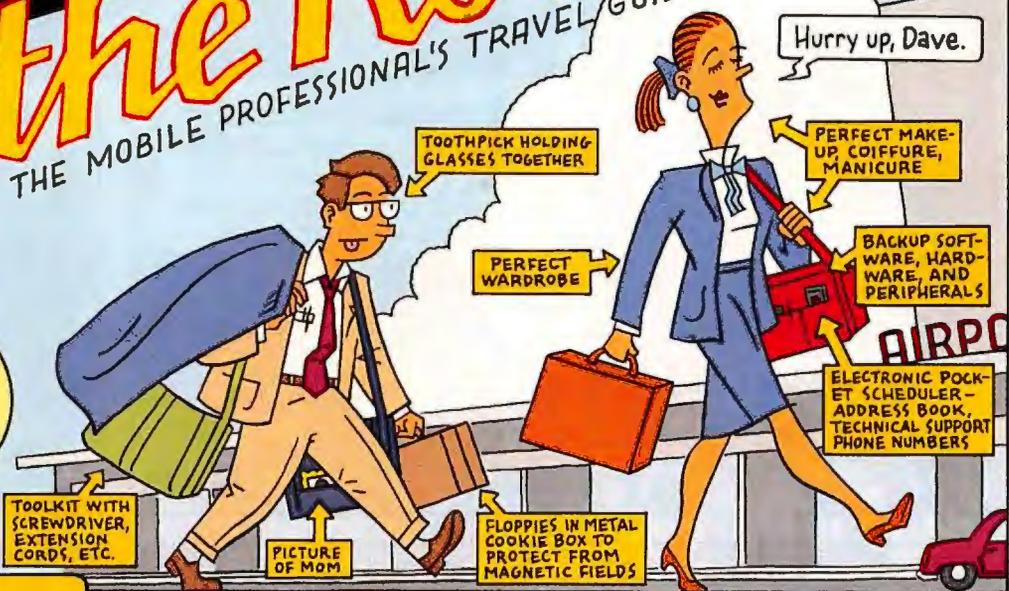
DARLA



by Bronwyn Fryer

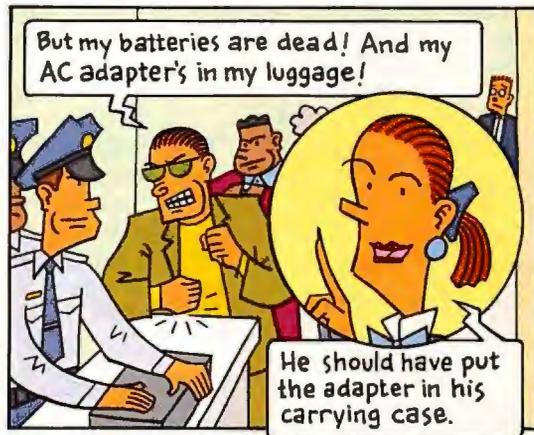
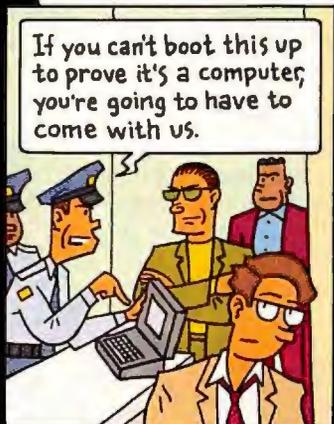
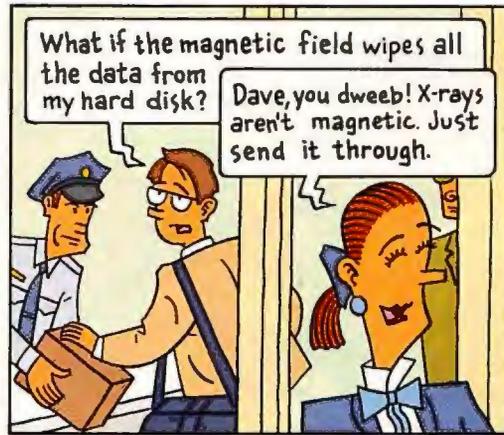
and Steve Fox

Art by Robert Kopecky

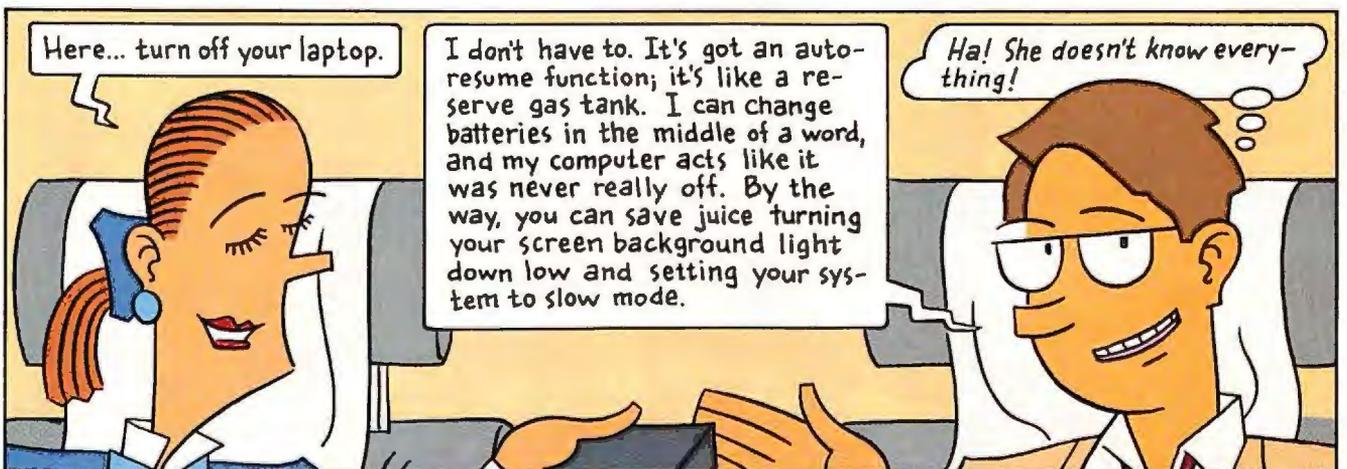


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ARMED ONLY WITH NOTEBOOK AND LAPTOP COMPUTERS, THE SOFTWARE THEY NEED, AND THEIR OWN RESOURCEFULNESS, DAVE AND DARLA ARE ABOUT TO CONFRONT SEVERAL COMMON COMPUTING-ON-THE-ROAD PROBLEMS.



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At the Hotel Lariot

Dave, you're giving off enough electricity to light up Gotham! Better ground yourself before you touch your laptop - you'll wipe out your keyboard EPROM. Discharge the static by touching the bathroom faucet with a coin.

And take off your shoes and socks so you don't produce more static.

Yes, ma'am.

Hmmm...

...modem line won't reach the desk. Lucky I brought that extra extension cord with the in-line connector.

Stupid jack disappears into the wall! Should I call Darla? No... she'll just make fun of me again. But I need to dial in, or I'm dead...

Hey Darla, you got that acoustic coupler?

What am I, a dating service?

Huh?

Sure. I'll bring it by.

Thanks, Darla.

Acoustic Coupler

Now that you're here, I'll show you how you can review the file that's on your word processor back at the office.

See, you can use your remote communications software to edit files on your office PC. Just dial the phone number connected to your host PC modem. Did you check to make sure your host PC was on?

See remote computing roundup by Judy Heim.

Of course. And I left a note telling maintenance not to turn it off. I turned the monitor off, though, 'cause I don't want the screen burned out.

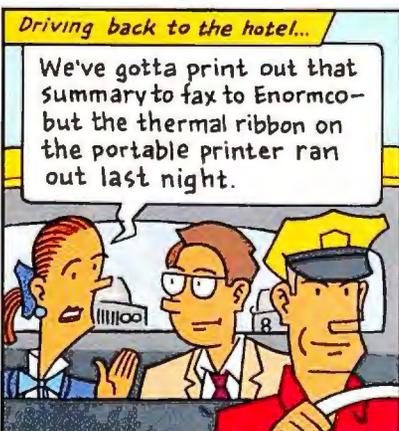
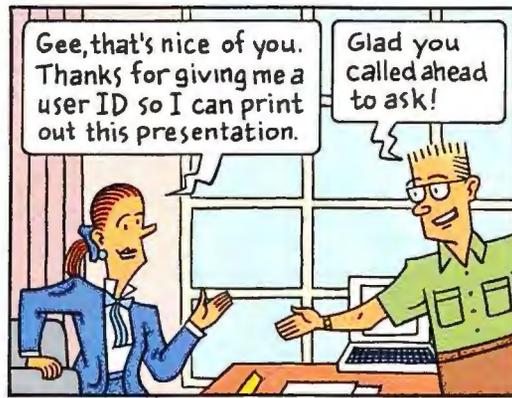
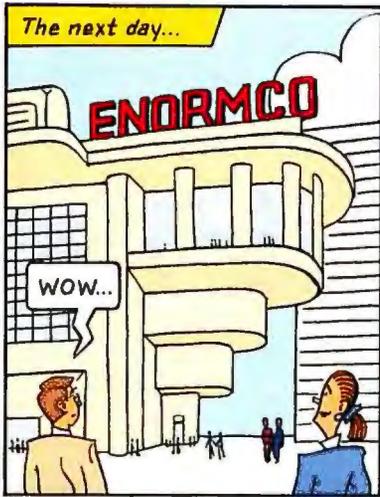
You can use Lap-Link Pro to transfer files and to check dates and times and make sure the newest version is on both machines. Sidekick 2 has a feature called Reconcile that lets you reconcile the two files remotely, in case your assistant has been playing with your system.

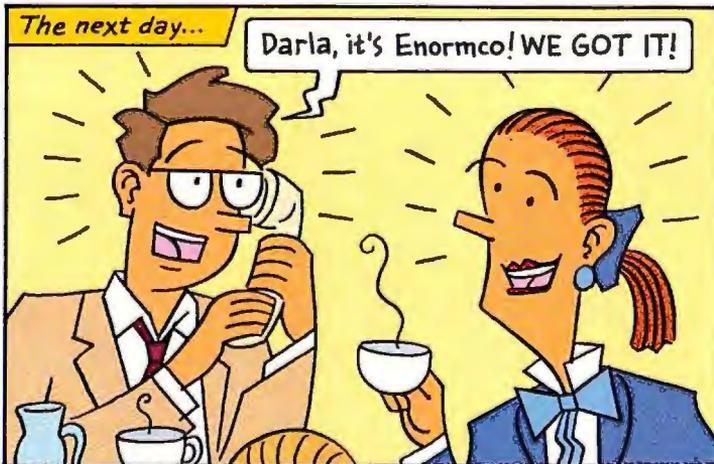
That's great!

I usually use the XCOPY command when I get back to track down discrepancies between my notebook and my PC files. You've been a big help. Thanks!

I don't believe it!

To use XCOPY, put a floppy in laptop's drive A: and type XCOPY C:*.* A:/S/D:02/12/92 (where 02/12/92 is today's date) This copies to drive A: all the files from all subdirectories that have been updated on or later than February 12th.





Proof You Gain Weight



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For starters, it's powered by a serious 20MHz i386SX™ processor. And with up to 8MB of RAM and your choice of a 40MB or 80MB internal hard drive, the Tempo Carrier delivers more muscle than some of the mightiest desktop PCs.

All of which means it's strong enough to run through all your Windows™ OS/2 or DOS applications from just about anywhere you happen to be working. Because, as one of the smallest high performance notebooks ever created, the Tempo Carrier fits into a space half the size of this ad.

But building a smaller footprint wasn't our only objective.

In fact, the Tempo Carrier is the world's first notebook to integrate the amazing new KeyMouse™. This keyboard-controlled pointing device completely eliminates the need for an external mouse or trackball. (If you've tried to use a mouse on an airplane, you know the advantages of that.)

Eliminating the weight, bulk and hassle of an external mouse or trackball, the unique KeyMouse uses the pressure-sensitive "J" key to control your cursor movement in any direction.

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The Tempo Carrier \$2,795

- Intel386™SX, 20MHz CPU
- 5.2 Lbs (Including Battery)*
- VGA Backlit Display
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- 1.5-Hour Quick Charge
- 80-Key Keyboard with "KeyMouse"
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The Tempo LX \$2,295

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- 2-3 Hours Battery Life
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- Full Travel 82-Key Keyboard
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- 80387SX Math Coprocessor Socket

includes a free Microsoft®-compatible mouse. We've also included two serial ports — so you'll still have an additional port free for an external modem, a portable numeric keypad or another serial device — as well as a parallel port, keyboard port and external VGA monitor port for total flexibility.

Speaking of monitors, the Tempo Carrier offers one of the brightest VGA screens in the industry. Our high speed 640 × 480 LCD delivers clear, backlit resolution and 32 shades of grey to help you create desktop-quality spreadsheets and graphics.

And to ensure that you work as productively as possible, our Multi-level Power Management System controls power to the display, hard disk and serial ports for the most efficient use of battery charge. It also provides battery saving Suspend/Resume and SmartSleep

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capabilities, as well as password-only access for reliable data security. It even allows you to set "hands free" operation by scheduling precise power-up times or enabling incoming modem calls to activate the system.

Considering all the features of the Tempo Carrier, it's hard to believe we loaded so much into such a lightweight package. Even when you combine the system, battery, AC adaptor and power cord into your free padded carrying case, you'll still have a total weight of just 8.2 pounds!

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Commuting by



Modem

A growing number of firms find telecommuting a viable solution to everything from employee dissatisfaction to the high price of office space.

Bag the 6 a.m. alarm, groggy shower, and gritty instant coffee. Forget the long commute, the wait at the toll gate, and the pricey parking lot. Just plug in your modem, boot up your PC, and double your company's productivity and profits—no matter where you are. Too good to be true? In fact, more and more workers are trading in the office and the freeway for the PC and the phone jack. Today an estimated 5.5 million workers telecommute on a part-time basis; that number is expected to grow to 11.2 million by 1995.

Many organizations claim that "telework" has increased productivity as much as 25 percent. And if only 5 percent of the commuters in Los Angeles telecommuted one day a week, they'd keep 41,000 tons of pollutants from entering the atmosphere each year. Given that computer and communications technology is more efficient and widespread than ever, and given the growing problems of gridlock and air pollution, everyone from George Bush to your local department store manager is jumping on the telecommuting bandwagon.

So why aren't we all telecommuting? What sounds easy in theory may be tough to put into practice. Creating a workable arrangement that meets the needs of you and your staff, and benefits the bottom line depends on a variety of factors—including the kinds of jobs involved and management practices.

PC World talked to executives at several organizations, ranging from independent consultants to managers in large corporations. Without exception, they agreed that a successful telecommuting program takes some doing, but the pay-offs—increased productivity, flexibility, and benefit to the environment—are often worth the effort.



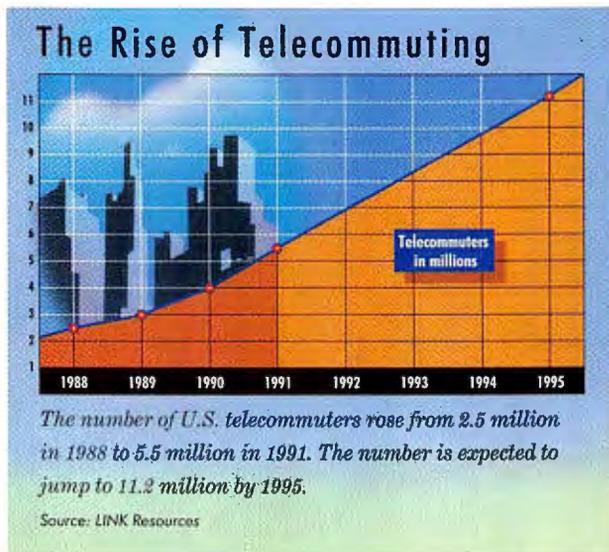
RETHINKING CONTROL

Managers must first confront the idea of losing the physical presence of their staff. "Control is the underlying issue for managers," says Paul Rupert, associate director of New Ways to Work, a San Francisco-based advocacy group. "Fear of losing control will dominate any decision about whether or not someone on the staff can be trusted to produce if they're not physically in the office."

Managers are especially reluctant to confront employees who haven't proven they can handle the responsibility. "Most supervisors deal only with decisions to hire, fire, or give a raise," Rupert says. "They rarely have to look an employee in the eye and deny the request to work from home." Because this requires the exercise of authority in a matter of intense concern to an employee, many managers would rather avoid the issue altogether by setting a "no telecommuting" rule.

A wiser move would be to take a hard look at your management style. "If you're used to managing by objectives and already have a system for measuring success, you'll probably manage remote workers well," says Rupert. "But if you haven't got such a management methodology in place, you'll need to develop it before setting up a telecommuting program."

Bronwyn Fryer



An employee's productivity should be measured not by hours spent physically in the office, but by goals met. "If you measure productivity by sight, you're a foolish manager," says Steve Coulter, an area vice president for San Francisco-based Pacific Bell—its telecommuting program is one of the largest and most successful in the country. "You need to measure results, not presence."

Few managers maintain that every employee can or should work at home. Those jobs that entail frequent, face-to-face interaction with others, lots of supervision, or meeting short-term deadlines should probably stay in the office. And everyone seems to agree that telecommuting should be done only on a part-time basis.

Most companies allow only proven employees to telecommute. But offering the option to a broader group can also produce surprising results from employees who aren't performing up to par. "It's an opportunity to enlist their enthusiasm," says Rupert. "You can dangle the carrot and require them to meet prerequisites, like working well without ongoing supervision. When a problem employee becomes productive, you get a significant payoff." Employees who see telecommuting as a perk have a high incentive to prove it works—and that they can maintain high performance.

SETTING THE GROUND RULES

Even managers who enthusiastically support telework are faced with a variety of issues, including insurance liability for equipment and injuries, security of company information, and tax payments on work space—things that are taken for granted in a traditional office.

Organizations with successful telework programs address these concerns by establishing a set of commonsense ground rules. At Pacific Bell, whose telecommuting program is a model for organizations across the country, more than 1000 managers are teleworkers themselves. The company's written

guidelines, which are signed by both supervisors and telecommuters, cover the following issues:

► **Insurance:** While Pacific Bell provides general medical insurance that applies at all times, employees who choose to work at home establish specific working hours with their supervisors. In this way, an employee who is injured while on the job is eligible for worker's compensation. "But if the company has reason to suspect that a staffer wasn't working on company activities at the time of the injury, then it's up to the employee to prove his or her case," says company spokesperson Craig Watts.

► **Accessibility:** To make sure that telecommuters are reachable while working at home, Pacific Bell supervisors establish specific times when a person should be at work and able to communicate with the office.

► **Safety:** Telecommuters are responsible for maintaining the safety of their work area. "On occasion, a supervisor can tour the employee's home office to make sure it meets company standards," Watts notes.

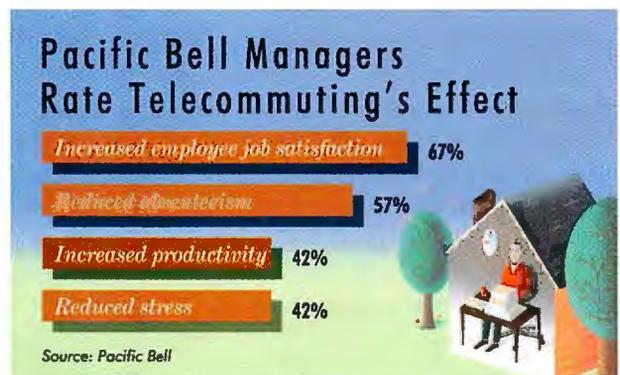
► **Equipment:** While the company accommodates requests for necessary business equipment such as computers, modems, printers, and fax machines, the telecommuter agrees to absorb office remodeling and furniture costs.

► **Information security:** Pacific Bell doesn't allow highly sensitive information to leave its corporate offices. When a telecommuter must take proprietary information home, he or she is expected to safeguard it, under lock and key if necessary. Electronic information is less of an issue, according to Watts, because all the company's data bases require password access. But what about floppy disks going back and forth? "It would be no less difficult in the office than it would be at home," Watts says. "It only becomes an issue if there's a problem." So far, he has heard of none.

► **Billing:** Telecommuters are required to keep accurate records of phone and modem use, and supervisors are rigorous in making sure that telecommuters' phones are used strictly for business.

► **Taxes:** The onus is on Pacific Bell employees to keep specific records for the IRS and to deduct use of their home work space.

Finally, Watts offers this advice: If telecommuting is new to



Six Steps to a Successful Telecommuting Program

1. SELECT THE RIGHT EMPLOYEES FOR TELECOMMUTING.

Telecommuters should be self-motivated and organized and their jobs should require minimal supervision.

2. TRUST TELECOMMUTERS. *Manage by objectives and results instead of by observation.*

3. SET SPECIFIC GROUND RULES. A detailed, written agreement accepted by the telecommuter and the supervisor helps assure that all goes smoothly.

4. INVEST TIME UP FRONT. Be prepared to spend extra time at the outset in administering, evaluating, and reporting results to senior management.

5. KEEP TELECOMMUTERS VISIBLE. Part-time arrangements and regular staff meetings assure that those working away from the office don't get "lost."

6. START WITH A PILOT PROGRAM. Research carefully, and look to other areas of the company—especially the sales department—for ideas.

making sure workers aren't out of the office more than a few days a week. GTE national sales manager Steve Koons and Pacific Bell's Coulter also address this problem by arranging monthly meetings with their staffs.

WHERE TO START?

Chances are that the best model for a successful telecommuting organization already exists in your company's sales department. Almost across the board, the companies with successful telecommuting programs started them in sales. "The reason telecommuting works so well in the sales force is that they have already dealt with the organizational, managerial, and physical issues around working out of the office," notes Rupert. Adds GTE's Koons: "If our people meet our requirements by serving our customers and bringing results to the corporation, that's enough for us."

The sales organization's successful pilot program can serve as a model for the rest of the company. Last year, for example, telephone giant AT&T equipped 500 people in its sales force with Safari NSX/20 notebook computers complete with modems, portable printers, cellular telephones, beepers, and E-mail. Representatives now claim that, besides bringing them closer to their customers, the program has improved their productivity by 25 percent and lowered the company's office space overhead by nearly \$400,000.

A NEW WAY TO WORK

While telecommuting gives a boost to employee morale and productivity, already high producers, especially those who work with portable computers, run the risk of working too much. Val Heil, a district engineer with Texaco's Lubricants Division, uses an Envoy SalesMate system running on a Grid 1520 laptop to work at home, in the office, and on the road. "I can work whenever, wherever I want," says Heil. "But the other side of the coin is that I can never get away from the office." Adds Carter's sales executive Robin Osborne: "I'm putting in more-productive hours. But if you're a workaholic, it's easier to stay addicted."

Few companies, however, complain about overzealous employees. Because teleworkers now enjoy a new level of freedom and independence, their added productivity can result in a huge difference for businesses in today's highly competitive global markets. Business guru Tom Peters—urging managers to break through bureaucracy, flatten organizational structures, and find an innovative way of working—has dubbed telecommuting "the ultimate bureaucracy-bashing tool."

For teleworking programs to pay off, companies must take the time and effort to provide communication, support, and tools. "Telecommuting is symbolic of management openness," says Rupert. "When management puts in the extra effort to make it go smoothly, everyone wins." ●

Bronwyn Fryer is an associate editor for PC World.

your company, you should count on investing time up front to take care of these details—just as you would to set up a field office. "It's vital to make sure the employee and the supervisor are in agreement," he adds. "Make sure you cross the t's and dot the i's."

MAINTAINING VISIBILITY

When a department staffer is routinely out of the office, regular communication becomes more important so employees don't "disappear." Most managers of telecommuters meet this challenge by relying heavily on E-mail, voice mail, and electronic file sharing. "I'm in touch with my people more frequently than ever before," notes Fred Brown, senior vice president of the William Carter Company, makers of Carter's children's clothes. "I can see immediately who's working productively and who's not."

Even so, it's easy for people in the company who have less-frequent contact with telecommuters to forget that out of sight doesn't mean out of mind. "Some people are concerned that if they aren't in the office, they may not be in line for more visible positions," says Rupert. To counteract this, he recommends

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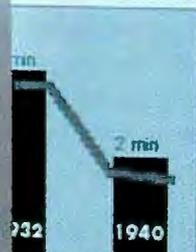
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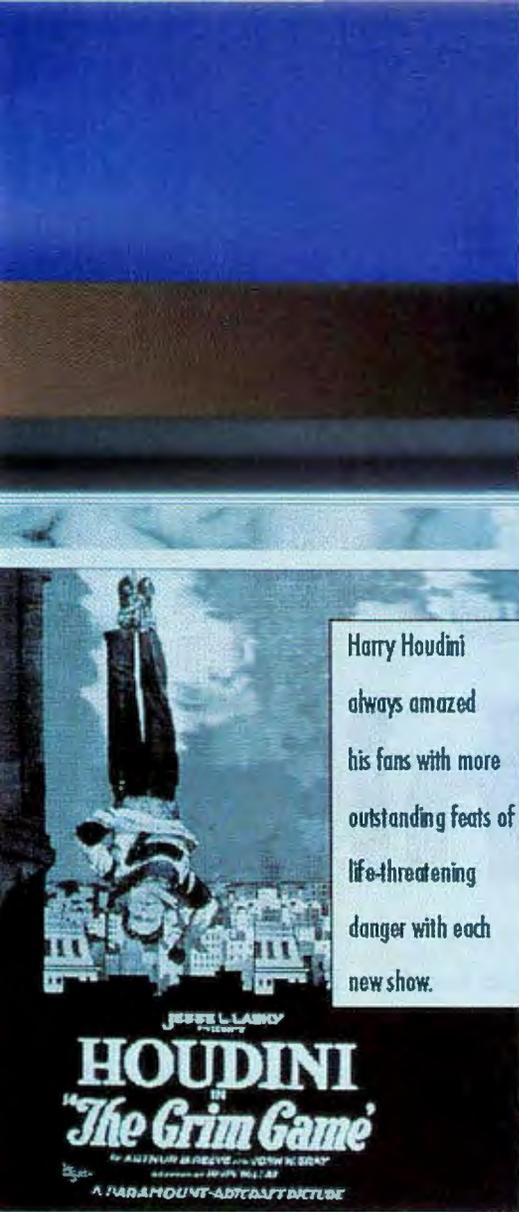
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Harvard Still Tops in Graphics

Harvard Graphics wins a popularity contest among PC World readers, but Freelance and PowerPoint also enjoy faithful followings.

CHRISTINE WHYTE

Harvard Graphics, *Freelance Plus* (the latest upgrade is called *Freelance Graphics for DOS 4.0*), and *Microsoft PowerPoint for Windows* are the three most popular PC presentation graphics programs—with *Harvard* the clear leader—according to *PC World's* 1991 World Class reader poll. In September we telephoned 100 randomly selected users of each program to learn why these products were the favorites.

All three programs received a “very satisfied” rating from survey respondents in regard to overall satisfaction with their product of choice. Respondents’ average ratings on ten criteria ranged from “satisfied” to “very satisfied.” A majority of each program’s users said they would buy the program again.

When our survey respondents shop for a presentation graphics program, they’re more interested in results and in a product’s intangible qualities than in

the nuts-and-bolts features that get the job done. When asked to rank buying criteria, respondents selected quality of output as *the* most important. Next came ease of use, a company or product’s reputation, and value for price paid. In this data- and cost-driven world, it’s interesting that our survey respondents consider spreadsheets links and price to be the least important features when choosing a graphics program.

Survey respondents weren’t disappointed once they put their programs to everyday use. Measured against the four top buying criteria, *PowerPoint* and *Harvard Graphics* edged out *Freelance* for output, ease of use, and company/product reputation. *Freelance* was the value leader, but the other two programs rated almost as high.

We also compared general customer satisfaction with specific features for all three programs. Although ease of use

and value ranked second and fourth among buying criteria, those items fell to seventh and fifth place, respectively, when respondents rated satisfaction with their programs. Respondents were most satisfied with company/product reputation, output, presentation features, and charting capabilities.

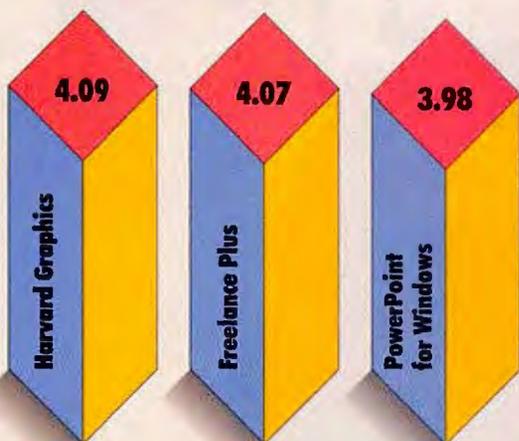
Although the results are not shown in the accompanying charts, we asked our respondents why they would or would not buy the same graphics program again. Those who would buy their program again listed its ability to meet their needs, its ease of use, and its compatibility with their other programs as the top reasons.

The biggest turnoffs were lack of needed features, difficulty of use, and finding products that were superior. ☛

Christine Whyte is a freelance editor in San Francisco.

USERS OF ALL THREE PROGRAMS ARE VERY SATISFIED

Overall satisfaction with product, 5=high 1=low



OUTPUT, EASE OF USE MOST IMPORTANT BUYING ISSUES

Users rank important buying criteria, 5=high 1=low



REPUTATION, OUTPUT EARN HIGH RATINGS

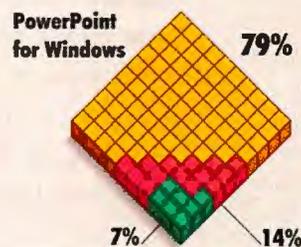
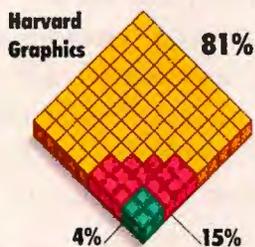
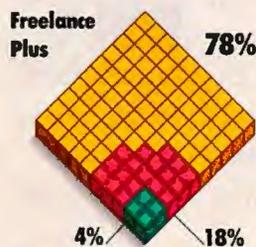
Satisfaction with key features, 5=high 1=low

	Overall	Freelance plus	Harvard Graphics	PowerPoint for Windows
Reputation	4.35	4.27	4.40	4.40
Output	4.14	3.94	4.17	4.30
Presentation features	4.14	3.89	4.20	4.32
Charting capabilities	4.04	4.06	4.09	3.94
Value	4.02	4.05	4.00	4.01
Spreadsheet links	3.98	4.09	3.78	4.04
Ease of use	3.93	3.86	3.97	3.98
Service and support	3.82	3.72	3.75	4.02
Price	3.73	3.89	3.58	3.75
Drawing tools	3.69	3.76	3.66	3.65

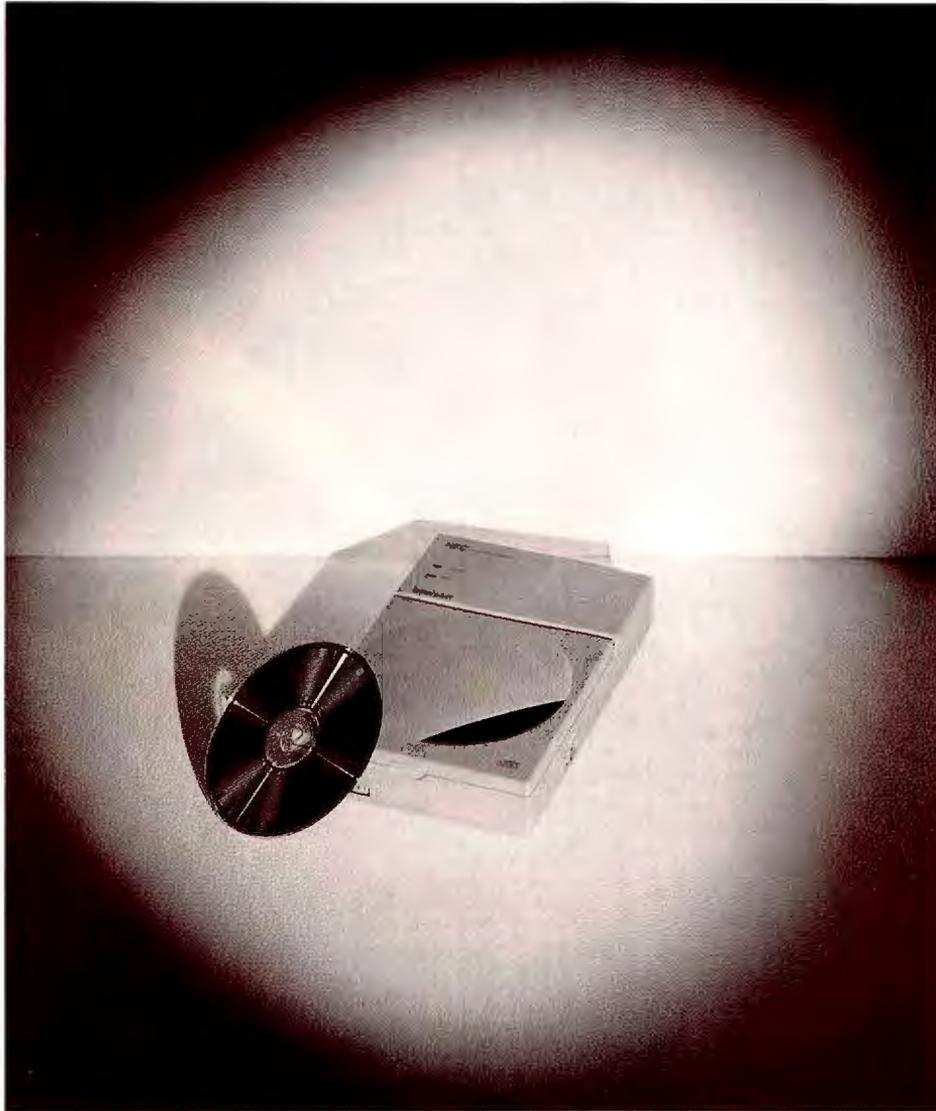
WOULD YOU BUY IT AGAIN?

Percentage of owners who would purchase the same product

Yes No Don't know



Source: Data is based on a September 1991 random phone survey of 100 users each of Harvard Graphics, Freelance Plus, and PowerPoint for Windows who purchased their new program or an upgrade within the previous 18 months. This data represents the opinions of the survey respondents.



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Special Report: **Best Windows Software**



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22.2	-5	009	*	83
%65.3	+8	1.0	=	23
3456	7	023	-8	%
753.2	5.3	006	2	%
22.2	-5	009	*	83
%65.3	+8	1.0	=	23
3456	7	023	-8	%
753.2	5.3	006	2	%
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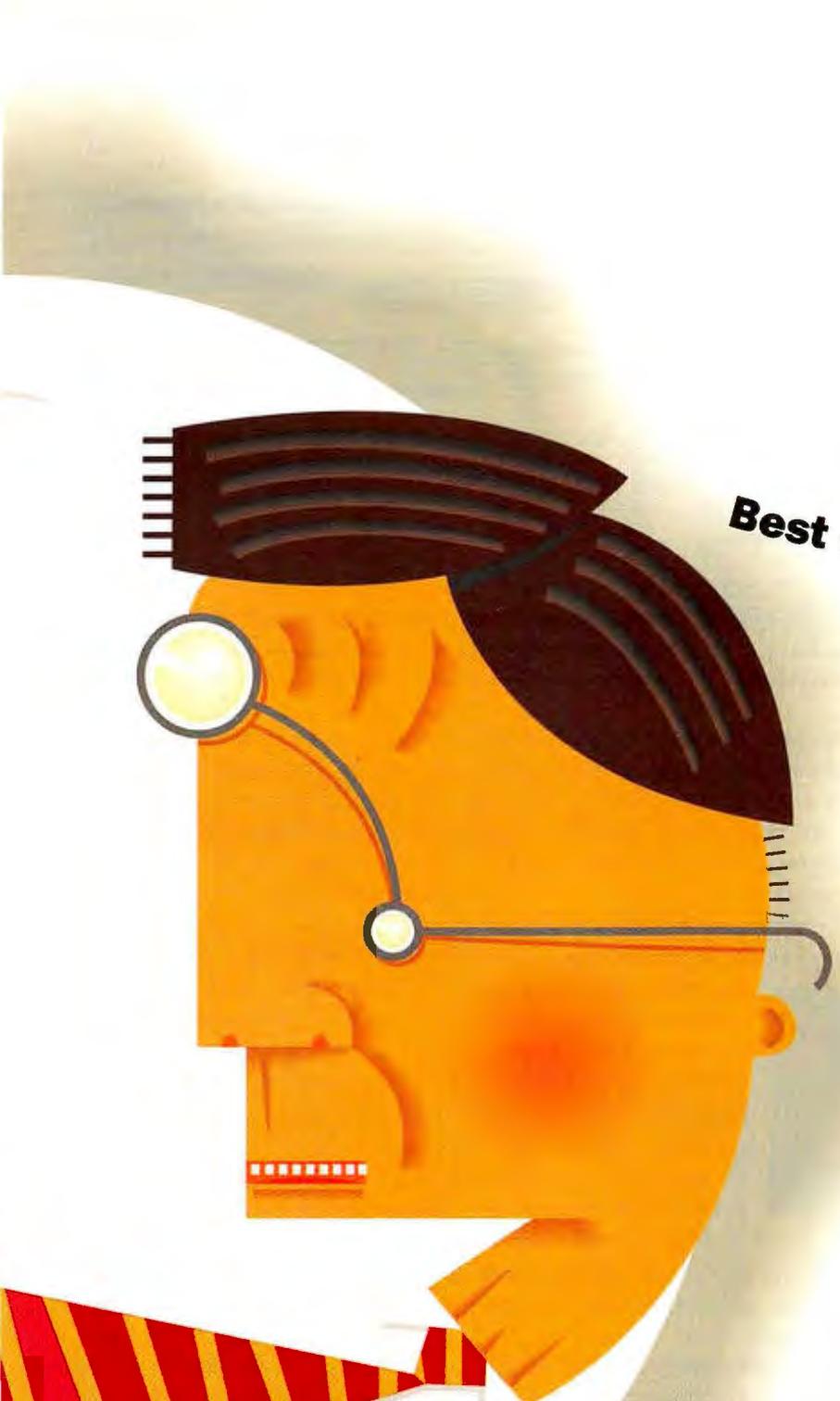


Reviews Ami Pro 2.0 • Excel 3.0
Superbase 4 1.3 • Hollywood 1.0
Ventura Publisher 3.0 • Corel Draw 2.0
Crosstalk for Windows 1.2
cc:Mail for Windows 1.1

New Applications on the Horizon

Seven Super Utilities for Windows

How To: Link Your Windows Applications



Ami Pro 2.0

Ami Pro 1.2 stands out among Windows word processors because of its superbly designed interface and its clear advantage in desktop publishing. Version 2.0 improves on these themes, particularly by allowing you to mold

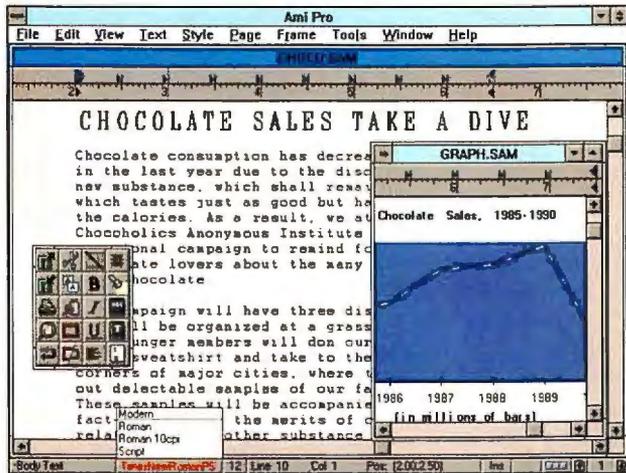
Best of Windows Reviews

the program to your own working style. You can create a customized group of command buttons, for example, or quickly set tabs, indentations, margins, and fonts using the new formatting ruler and status bar. *Ami Pro's* most formidable challenger, *Word for Windows 2.0*, also offers major ease-of-use enhancements, but it was released too late to be considered for this review.

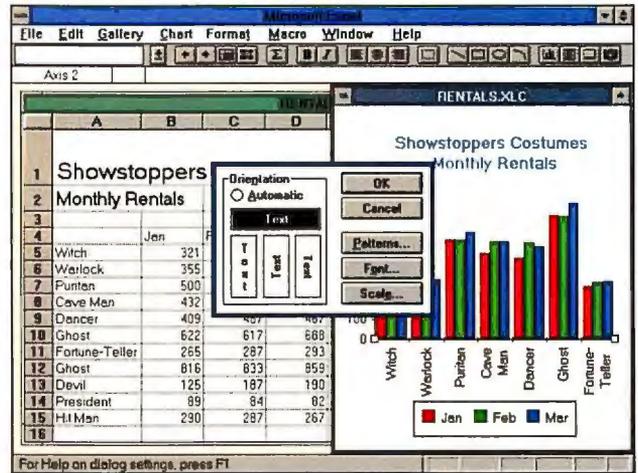
Because *Ami Pro* is based on frames (sizable boxes that contain their own formatting), it makes incorporating and editing graphics or text with special effects easy. *Ami Pro* has enhanced its superb charting module so you can manipulate sample charts in a dialog box, adjust perspective, and choose from 16 color schemes. New drawing tools include boxes, arrows, and Bezier curves,

Edited by **Anita Amirrezvani**

Pull out the stops, Windows fans—you can finally put together a full suite of Windows applications without making compromises. Our expert reviewers selected the best Windows products in eight application areas, making software with a smooth, engaging interface a top priority. Since applications continue to change overnight, we also peeked at products just around the corner. Read on to discover the hottest software for a super Windows workstation.



Ami Pro 2.0's improved interface offers pull-up menus, better support for windowing, and a customizable palette of commands.



Navigating through Excel 3.0 is easier than ever. Double-click on an object, and up pops the relevant dialog box.

and you can select from 100 clip-art designs. *Ami Pro* now also includes *Adobe Type Manager*, which generates 13 scalable fonts.

Ami Pro 2.0 finally catches up to *Word for Windows* in work-group computing, providing redlining and the ability to compare different versions of a document. The new outliner helps organize material and collapse and expand documents for different audiences.

Powerhouse capabilities include *Ami Pro's* conditional operators and macros, which let you create forms that perform calculations, look up sales figures, or generate pick lists. A new equation editor supports scientific applications. *Ami Pro's* greatest strengths used to lie in its formatting ability and its smooth interface; now it's also a powerhouse for work groups, technical users, and form-intensive environments. —Eric Brown

Excel 3.0

Even a brief session with *Excel 3.0* will convince you that it ranks among the most intuitive packages available. Menu design is super efficient: No matter what you're working on, you can often make the relevant dialog box appear by double-clicking, rather than plowing through menus.

Even better, new hypertextlike features transport you from, say, a formula reference over to another worksheet containing the referent cell. Such tricks can make navigation and analysis remarkably smooth.

Creating a new worksheet usually involves a lot of trial and error. *Excel* helps

you get organized by providing an outliner that creates a hierarchy in your worksheet of up to seven levels. This is a boon when it's time to address different audiences. For example, you can easily collapse the

worksheet and print summary figures for management, then expand it and show the underlying detail to your accountants.

Anyone who creates budgets will appreciate *Excel's* automatic consolidation feature. Unlike most programs, *Excel* allows you to consolidate worksheets of different sizes and shapes and create links to other files to avoid overcrowding. Frontline Corporation's excellent solver is included for users who need to perform what-if calculations.

To link your worksheet to the data mother lode, *Excel 3.0* comes with *Q+E*, a tool that extracts data from *dBASE*, *Microsoft SQL Server*, and other products. The program also provides formatting styles, a slick help system for 1-2-3 users, and the ability to draw annota-

tions right on the worksheet. As long as you have the hardware to handle it, *Excel's* well-designed interface and copious toolbox make it the spreadsheet of choice for most budgeting and financial needs. —Richard Scoville

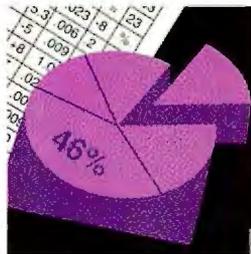
Superbase 4 1.3

Until *Paradox for Windows* ships later this year, *Superbase 4* will stand as the only *Windows* data base with the power of DOS-based standards like *d:BASE* and *R:base*. For data base developers, *Superbase* offers a complete programming language, a good forms designer, and an excellent mail merge capability. For other users, however, its interface may be daunting.

Superbase's interface deviates both from *Windows* conventions and from the data base norm. Scroll bars are seldom functional, you can't point to a record and edit it in the Table view, and the program offers no *Paradox*-like query by example. Instead, you pick and choose fields and options from multiple list boxes—a confusing process for all but the simplest queries.

Unlike most packages, *Superbase* allows you to define validation safeguards at the file level, which reduces input errors. Its forms designer (which doubles as a competent report writer) is powerful and easy to use and lets you define complex one-to-many data relationships.

Superbase's application program-



ming language, DML, is modeled on BASIC. Without an automatic application generator, however, intermediate users may have trouble making the leap to programming.

Superbase's excellent mail merge capability makes creating form letters a breeze, and with a \$495 add-on, available in January, the program acts as a front end to *Microsoft SQL Server* and other client-server data bases. In many ways, *Superbase* acts like a *Windows* version of *dBASE*, while offering extras such as file-level safeguards. But because the program suffers from a nonstandard interface and poorly organized documentation, it will appeal mainly to dedicated *Windows* developers. —Paul Litwin

Hollywood 1.0

The problem with many presentation programs is, the more complicated they are, the fewer organizational tools they offer. But *Hollywood* makes no compromises: It helps organize every element of a presentation while offering sophisticated charting and enhancement features that leave other programs far behind.

Hollywood's organizational tools include an outliner; global editing of an entire presentation's colors, type styles,

and so on; and multiple views of each slide, which make it easy to coordinate the master page, notes, and handouts. When it's time to make changes, the slide sorter quickly and efficiently reorganizes slides.

Hollywood's text enhancements compare to those of advanced drawing programs. You can create curved titles, add shadowing and mirror effects, and rotate the lot. The program is especially good at implementing graduated (blended) shades to both objects and backgrounds. Unlike most other software, *Hollywood* lets you preview color schemes and styles in dialog boxes. Scalable Dutch and Swiss fonts from Bitstream are included.

Hollywood supports virtually all important business charts. It even lets you produce combination area-line, dual y-axis, and table charts. The program performs curve smoothing and provides a host of other drawing tools, including a paintbrush and spray can for creating unique effects.

To complete your presentation, *Hollywood* automatically generates speaker notes and audience handouts. You can also produce self-running versions of on-screen shows and distribute them to branch offices or clients. With superb organizational tools, sophisticated text enhancement, and advanced drawing ca-

pabilities, *Hollywood* leaps ahead of other presentation software.

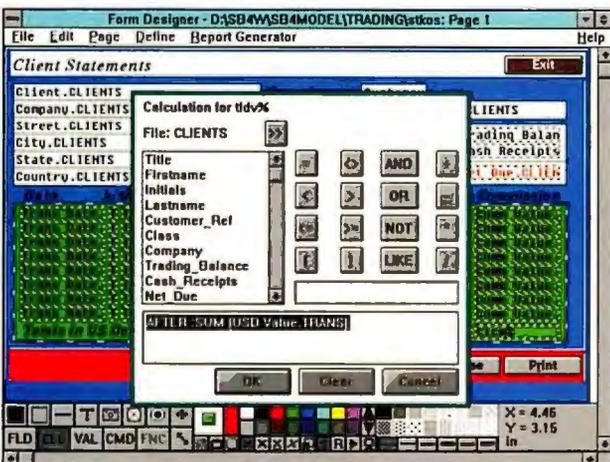
—Richard Jantz

Ventura Publisher 3.0

Like its archrival *PageMaker 4.0*, *Ventura Publisher 3.0* is a superb desktop publishing program with excellent page layout and typographic features. But while *PageMaker's* ease of use and graphic arts emphasis make it attractive to design-oriented users, *Ventura's* superior automated features make it the best choice for rapid processing of business documents.

Only *Ventura* automatically numbers headings, paragraphs, tables, figures, pictures, and captions and then—here's the good part—renumbers them if you add a new item or move or delete a previously numbered item. Other timesaving features include footnoting, internal cross-referencing, and customized headers and footers that automatically indicate each page's contents—a godsend for producing sales catalogs or data base directories. And for documents that include complex formulas, *Ventura* offers a unique, built-in equation editor.

But *Ventura's* automated bag of tricks isn't limited to technical material: You can also push buttons that add bullets and *initial caps* (enlarged capital



Superbase's forms generator is well designed and powerful, allowing you to create calculated fields by pointing and clicking.



Hollywood couples easy organization of presentations with powerful chart enhancement tools.



letters) to a paragraph, automatically link captions to pictures, and turn on vertical justification to make professional-looking multicolumn text in newsletters, brochures, and reports.

Only *PageMaker* can produce materials that include scanned color photographs. But *Ventura Publisher 4.0*, due out by the time you read this, promises to provide improved color capabilities and support for color extension add-ons, as well as such new features as a spelling checker, search and replace, and undo/redo. Until then *Ventura 3.0's* abundance of automated features make it the best package for most desktop publishing chores. —Richard Jantz

Corel Draw 2.0

PC WORLD BEST BUY
Corel Draw has what many other drawing packages lack: superb control over type. In addition, version 2.01 provides drawing tools and special effects that match or exceed those of other top-rated drawing programs. Add a large clip-art library and first-rate image management, and you have a sizzling Best Buy.

Corel Draw incorporates some of the finest typographic features from the desktop publishing world. You get more than 150 scalable fonts, the ability to

create your own typefaces and symbols, and interactive kerning (letter spacing).

As for drawing, *Corel 2.0* supports point-by-point Bezier curves for smoother, more precise output. New transformation tools catch up to its competitors', allowing you to create snappier sales and marketing publications. The Extrude command, for example, lets you twist 2-D shapes into 3-D objects that pop off the screen. The Blend command draws all the intermediate steps (including every shape and color) in the transition between two drawings—say of a monkey and a man. At last *Corel Draw* lets you add perspective to a drawing or mold text into any shape.

If you work with large libraries of image files, you'll appreciate *Corel's* Mosaic utility. You can select a file by choosing it from a series of miniature images, create compressed libraries of files, and export or print a group of files at once.

Corel's encyclopedic clip-art library includes 750 images and 3300 symbols. And if you need more, the new CD ROM version of *Corel* offers 10,000 images, uncompressed for quick access, and 50 extra fonts. For designers who concentrate on eye-catching images, and business presentation types who need attention-grabbing text, *Corel* is a must.

—Deke McClelland

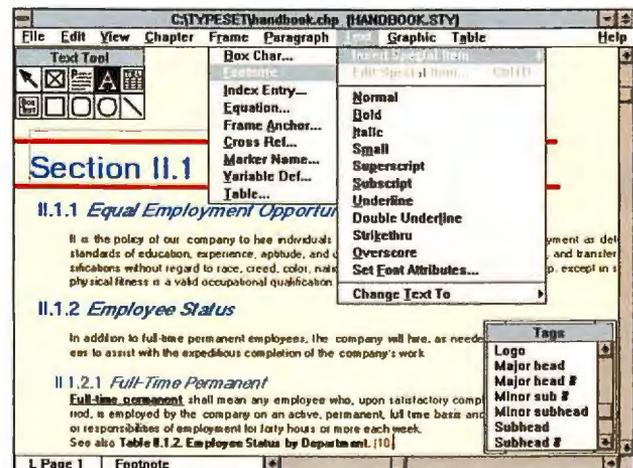
Crosstalk for Windows 1.2

The world of communications is still pretty arcane for most users. And while communications packages haven't quite achieved the ease-of-use standards of the rest of the *Windows* world, *Crosstalk for Windows* comes closest.

Crosstalk has an excellent installation routine and a tutorial that covers on-line basics. Even though it doesn't offer an icon-based interface like its *Windows* rivals *DynaComm* and *MicroPhone II*, its comparatively streamlined menus are easier to use. You can cut and paste freely, and file transfers work in the background while you work on something else.

Crosstalk for Windows includes the robust CASL language for creating scripts, or you can use the new learn mode to record scripts as you go. Automatic log-on scripts are provided for MCI, CompuServe, and Dow Jones News/Retrieval. You can also create a function key template of up to 60 keys that automatically execute scripts.

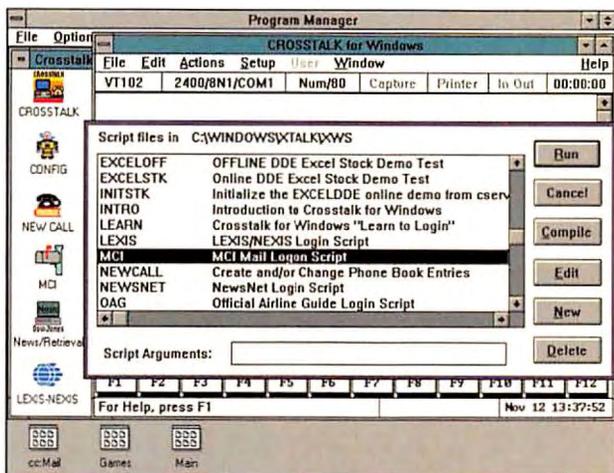
New to version 1.2 is asynchronous communications server support, a capability that allows you to share modems on a LAN. For DEC users, *Crosstalk for Windows* provides VT220 and VT320 emulation for access to DEC systems and applications. If you own an error-correcting modem, you can take advantage of YMODEM-G support to perform faster file transfers.



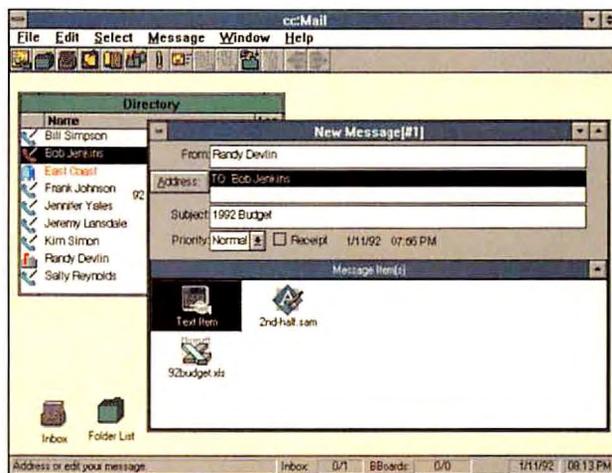
Ventura's wealth of automated features, such as footnotes and cross-references, gives it the edge in producing business documents.



Corel Draw 2.0 provides superb special effects, powerful drawing tools, fine control over text, and an abundance of fonts and clip art.



Crosstalk lets you click on icons to call your favorite on-line services, and you can easily edit the associated scripts.



In cc:Mail, you can double-click on an attached Excel or Ami Pro file, and that application will launch automatically.

It's too bad that *Crosstalk for Windows* doesn't follow *Crosstalk MK.4's* footsteps by providing a dialing directory on a par with the top DOS-based programs. Although it's not as easy to use as some other software, such as the shareware package *Unicom*, *Crosstalk for Windows* is recommended because of its superb scripting capabilities and rich features set. —*Judy Heim*

cc:Mail for Windows 1.1

The DOS version of *cc:Mail* sets a high standard for E-mail. Its menuing system is so streamlined you can use it almost without thinking, and even novices need little training.

cc:Mail for Windows is also a sound product, although a bit more opaque due to a proliferation of icons and pulldown menus. It offers the advantage of open-

ing multiple messages or folders at once and cutting and pasting between them.

Version 1.1 of *cc:Mail for Windows* adds SmartIcons, a customizable palette of iconized commands that can remain on screen. If your work habits change, simply change the command icons.

Because it's always a hassle to switch between applications, even in *Windows*, *cc:Mail 1.1* supports application launching. Just double-click on any file attached to a message and *cc:Mail* will load it into the relevant application. If you don't own the application, you can view the attachment anyway using *cc:Mail's* new viewers for different file formats.

Lotus has made *cc:Mail* an E-mail linchpin in its *Windows* applications. If you work in Lotus products such as *1-2-3 for Windows*, *Ami Pro 2.0*, or *Freelance for Windows*, you'll automatically get a

File menu option that allows you to send the file you're working on through *cc:Mail*.

cc:Mail's connectivity is superb; a host of third-party products extends its reach to fax machines and E-mail systems across the globe. An optional group scheduler and calendaring module is also available, making *cc:Mail* the most complete E-mail product on the market. —*Anita Amirrezvani*

Anita Amirrezvani, Judy Heim, Richard Jantz, and Richard Scoville are contributing editors and Eric Brown is senior reviews editor for PC World. Paul Litwin is a medical statistician and a contributing editor for Data Based Advisor. Deke McClelland is the author of Drawing on the PC (Business One Irwin, Homewood, Illinois, 1990).

Where To Buy

Ami Pro 2.0
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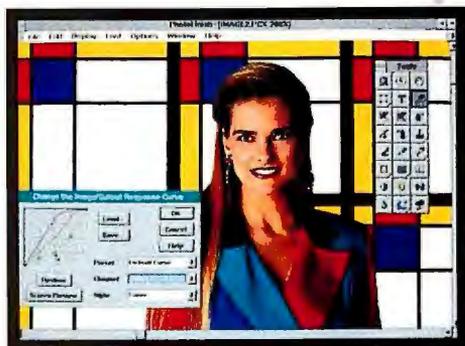


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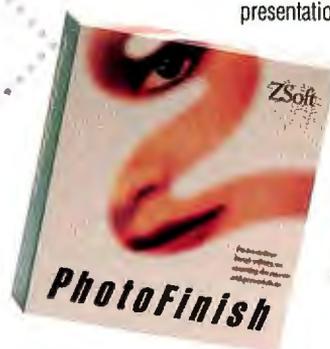
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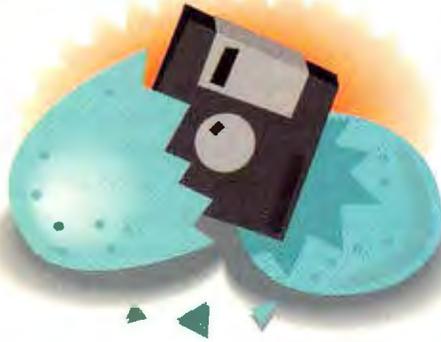
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New Applications on the Horizon



If you thought your suite of *Windows* applications was complete, think again. A rich assortment of new releases is coming down the

pike, and they may well change your opinion (and ours) of what's best. Here's a list of major products that were unreleased as of our deadline.

Word Processing

• Word for Windows 2.0

It just missed this review, and it promises to pack a wallop. New features include a grammar checker, a drawing package, a charting program, a graphical equation editor, a multilingual dictionary, and improved mail merge and envelope printing. Watch out, *Ami Pro!* Microsoft, One Microsoft Way, Redmond, WA 98052; 800/426-9400, 206/462-9673. List price: \$495

Reader service no. 623

• WordPerfect 5.1 for Windows

WordPerfect users now have even more reason to get graphical. 5.1 will simplify common tasks with customizable button bars, a *PageMaker*-like formatting ruler, a font viewer, a macro language, and more. *WordPerfect*, 1555 N. Technology Way, Orem, UT 84057; 800/451-5151, 801/225-5000. List price: \$495

Reader service no. 624

Spreadsheets

• Quattro Pro for Windows

Expected in first quarter 1992, this spreadsheet aims to match or top *Excel 3.0*. It has customizable command buttons; pop-up menus; a convenient notebook metaphor for organizing multiple worksheets; SQL data base access; and the power to create custom applications without programming. *Borland Int'l*, 1800 Green Hills Rd., Scotts Valley, CA 95067; 800/331-0877, 408/438-8400. List price: unavailable at press time

Reader service no. 625

Presentation Graphics

• Freelance Graphics for Windows

Building on the *OS/2* version, this product is meant to guide users through every step of creating a presentation. It has an interactive tutorial, presentation templates that prompt you for data, and customizable command buttons. *Lotus Development*, 55 Cambridge Pkwy., Cambridge, MA 02142; 800/343-5414, 617/577-8500. List price: \$495

Reader service no. 626

• Harvard Graphics for Windows

Modeled on its top-selling DOS counterpart, this package promises the same easy chart creation. Like *Persuasion* and *Freelance Graphics for Windows*, the program lets you globally edit presentations. Branching slide shows let you tailor PC-based presentations to your audience. *Software Publishing*, 3165 Kifer Rd., Santa Clara, CA 95051; 408/986-8000. List price: \$595

Reader service no. 627

• Persuasion 2.1 for Windows

This upgrade offers better performance and tighter integration with other *Windows* applications—and still lets you manage presentations easily. You can even create run-time shows that work on both Macs and PCs. *Aldus*, 411 First Ave., Seattle, WA 98104-2871; 206/622-5500, 206/628-2320. List price: \$495

Reader service no. 628

Desktop Publishing

• QuarkXPress 3.0 for Windows

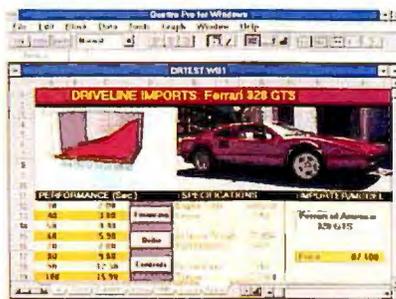
Aimed at publishing professionals, this legendary Mac package is due in the first half of 1992. This precision product has impressive range—for example, it handles type sizes from 2 to 720 points—and features movable palettes for editing type, pictures, color, and style sheets. *Quark*, 300 S. Jackson #100, Denver, CO 80209; 800/356-9363, 303/934-2211. List price: \$895

Reader service no. 629

• Ventura Publisher 4.0, Windows Edition

Version 3.0 earns a Best Buy (see review in this issue), but 4.0 won't stop there—it's aiming for the top slot in color publishing—including color separation. New features include a spelling checker, search and replace, undo/redo, and OLE capabilities. *Ventura Software*, 15175 Innovation Dr., San Diego, CA 92128; 800/822-8221. List price: \$79

Reader service no. 630



The forthcoming *Quattro Pro for Windows* will offer advanced drawing and graphing tools and use a notebook metaphor.



Drawing

•Aldus FreeHand 3.0 for Windows

Like its Macintosh cousin, *FreeHand* allows you to create a custom work environment. It gives you floating command palettes for tools, styles, and colors, and the ability to organize designs into multiple layers that can be separately edited and printed. A full-screen color preview mode makes drawing and editing easier. Aldus, 411 First Ave., Seattle, WA 98104-2871; 206/622-5500, 206/628-2320. List price: \$595

Reader service no. 631

•Harvard Draw for Windows

Designed for business users who aren't necessarily artists, *Harvard Draw for Windows* produces numerous palettes containing complementary color schemes and fills, a helpful information bar that describes icons and menu commands, and context-sensitive on-line help. Software Publishing, 1901 Landings Dr., Mountain View, CA 94039; 408/986-8000. List price: \$595

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Communications

•DynaComm 3.1, Terminal Plus

Slated for release in January, *DynaComm* has a completely redesigned interface, lets users share a modem on a LAN, and supports multiple networked modems via an upgrade package from Cross Communications. A pared-down version of *DynaComm*, *Terminal Plus*, features the same revamped interface. FutureSoft, 1001 S. Dairy Ashford #101, Houston, TX 77077; 713/496-9400. List price: *DynaComm* \$249.95, *Terminal Plus* \$99.95

Reader service no. 633

•MicroCourier, Carbon Copy for Windows

MicroCourier is a complete, inexpensive package that simplifies communications by means of a utility that prompts novices through an entire session. If you also need remote capabilities, *Carbon Copy for Windows* enables you to access distant PCs and perform file transfers. Microcom, 500 River Ridge Dr., Norwood, MA 02062; 800/822-8224,

617/551-1000. List price: *MicroCourier* \$99, *Carbon Copy for Windows* \$199

Reader service no. 634

E-Mail

•BeyondMail for Windows

DOS *BeyondMail*'s claim to fame is its messaging language, which lets users create applications to route information, archive correspondence, even consolidate worksheets. At press time, the Windows version's features were unannounced. Beyond Inc., 38 Sidney St., Cambridge, MA 02139; 800/845-8511. List price: unavailable at press time

Reader service no. 635

•Da Vinci eMail for Windows 2.0

Version 2.0 improves on an already strong product by providing message folders and more flexible sorting functions. Other new features include file viewers and the power to launch applications by clicking on file attachments. Da Vinci Systems, P.O. Box 17449, Raleigh, NC 27619; 800/328-4624, 919/881-4320. List price: unavailable at press time

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Seven Super **Utilities** for Windows

Norton Desktop for Windows

It slices, it dices, it manages your desktop. *Norton Desktop for Windows* streamlines File Manager and Program Manager functions and provides Mac-like icons for printing, saving, and trashing files. Utilities do chores like backing up, copying, and searching. If you accidentally erase critical files or—perish the thought—format that hard disk, an emergency disk helps save you from yourself. *Symantec, 10201 Torre Ave., Cupertino, CA 95014; 408/253-9600. List price: \$149. —John Walkenbach*

Reader service no. 609

Adobe Type Manager for Windows 1.0

Printers aren't limited to built-in fonts anymore. *Adobe Type Manager* expands your printer's capabilities with 13 high-quality typefaces. Output quality is excellent, especially on laser and ink jet printers. Version 2.0, due out by the time you read this, promises improved performance. And if you want even more variety, the \$198 *Plus Pack* provides 22 additional scalable fonts. *Adobe Systems, 1585 Charleston Rd., Mountain View, CA 94039; 800/344-8335. List price: \$99. —George Campbell*

Reader service no. 610

ProKey for Windows

Tired of navigating through *Windows*? *ProKey for Windows* lets you automate common tasks using macros. You can attach frequently used macros to buttons and put them in a pop-up window. Unlike many *Windows 3.0* macro processors, *ProKey* lets you edit macros, and you can catch errors in a window that executes macros step by step. *Rose-*

Soft, 13256 Northrup Way #23, Bellevue, WA 98005; 206/562-0225. List price: \$99. —Scott Dunn and Jesse Berst

Reader service no. 611

After Dark

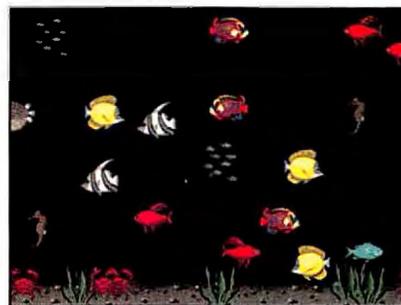
This screen saver is useful *and* fun. You get 35 animated displays including a nighttime cityscape, a fish-filled aquarium, and flying toasters, complete with sound effects. You can insert your own graphics or messages and set passwords so no one else gets beyond your display. *Berkeley Systems, 1700 Shattuck Ave., Berkeley, CA 94709; 510/ 540-5535. List price: \$49.95. —Steve Bass*

Reader service no. 612

Desktop Set 3.0

Desktop Set is like a *SideKick* for *Windows*—it has a capable calculator, phone book, and calendar. You can enter appointments in a daily schedule, set alarms and reminders, and enter notes and addresses in the phone book. If you bill by the hour, you'll welcome the call logging feature with its date stamp and timer. *Okna, P.O. Box 522, Lyndhurst, NJ 07071; 201/460-0677. List price: \$149. —Patrick Marshall*

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After Dark lets you save your screen from burn-in with one of 35 animated displays.

Central Point Backup 7.1

It's two, two, two programs in one, with *Windows* and DOS versions in the same box. *Central Point Backup* performs full, partial, and incremental backups and restores, and it can handle multiple drives in a single session. Unlike most *Windows* backup programs, it supports prescheduled background backups to tape. Handy utilities are also provided for file compression and virus protection. *Central Point Software, 15220 N.W. Greenbrier Pkwy. #200, Beaverton, OR 97006; 503/690-8090. List price: \$129. —Rex Farrance*

Reader service no. 614

Visual BASIC

This compiler is a boon to part-time *Windows* developers. Unlike heavy-duty tools such as *Turbo Pascal for Windows*, *Visual BASIC* is designed for programming visually. You put icons, buttons, and graphics in a window, then write BASIC code in an adjoining window to determine what happens when someone clicks on a button or enters data. The code is compiled into EXE files that you can run inside *Windows*. *Microsoft, One Microsoft Way, Redmond, WA 98052; 800/227-4679. List price: \$199.*

—Lincoln Spector

Reader service no. 613

Steve Bass, Jesse Berst, George Campbell, and John Walkenbach are contributing editors for PC World; Lincoln Spector is an associate editor and Rex Farrance an assistant editor. Patrick Marshall is a freelance writer in Silver Spring, Maryland, who specializes in personal information managers.

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How To: Link Your Windows Applications



With *Windows* software, togetherness is best. Here's how to swap data automatically between *Windows* applications and streamline common business chores.

By John Walkenbach

If you do all your work in *Windows* applications, you know the advantages of an integrated environment. *Windows* avoids the tiresome process of frequently exiting to DOS; opening, closing, and re-opening applications; and worst of all, keying in data from other software.

But you can achieve even tighter integration—to the point that you can automate tasks involving several applications. The key is *Windows*' Dynamic Data Exchange (DDE), a method of passing data between applications.

Suppose you need to prepare a monthly report in *Ami Pro* that summarizes regional sales figures and includes a fancy graph created in *Excel*. Instead of starting from scratch each month, you can prepare the report and graph just once, set up DDE links between the documents, and then simply update the numbers in your spreadsheet. The changes flow into the graph and then straight into your report.

This article shows you how to set up a

DDE link between *Excel 3.0* and *Ami Pro 2.0*. *Ami Pro* doesn't do 3-D graphs, so you use *Excel* to create a chart and link it to *Ami Pro*. Finally, you send the completed report to co-workers via *cc:Mail for Windows*.

Creating the Chart in Excel

The *Excel* sales figures and chart are shown in **SCREEN 1**. We'll assume that *Excel* and *Ami Pro* are running and that you have a mouse installed.

1. In *Excel*, type the sales figures in **SCREEN 1**, then select *File Save as* and name the file **SALES.XLS**.

Live Data Links Speed Regular Chores

	A	B	C	D	E	F
1						
2	July	874	1093	1342		
3	August	912	995	1456		
4	September	925	1042	1435		
5	October	863	1112	1764		
6	November	989	1135	1749		
7	December	1033	1045	1801		
8						
9						
10						
11						
12						
13						
14						

It's simple to link data between *Windows* applications. Select the *Excel* chart and copy it to the Clipboard using *Edit Copy*, then switch to *Ami Pro* and use *Edit Paste link* to insert the chart into the sales

report. Now you can change a number in *Excel*, and the *Ami Pro* chart updates automatically. Finally, use *File Send mail* to launch *cc:Mail* from within *Ami Pro* and send the sales report to co-workers.

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2. Highlight cells A1:D7. Choose *File New*, then click on *Chart* (or use the <F11> shortcut key). The chart will appear in a new window.
3. Select *Gallery 3-D column* from the menu and click *OK*.
4. Maximize the chart window, then select the *File Save as* command and save the chart as SALESCHT.XLC.
5. Select the chart with the *Chart Select chart* command, and select *Edit Copy* to copy it to the Clipboard.

Creating the Link to Ami Pro

Next, you'll link the chart to the *Ami Pro* report.

1. Activate *Ami Pro* and create the text shown in **SCREEN 2**, or substitute your own text.
2. *Ami Pro* requires graphics to be inserted in a frame, so use the frame SmartIcon to create a frame by dragging (or select *Frame Create frame*). You can adjust the size later.
3. Since you copied the *Excel* chart to the

Clipboard, just double-click to select the new frame and choose *Edit Paste link* to insert the graph.

4. At this point you can adjust the frame and graph scaling using the *Frame* command on the *Ami Pro* menu.
5. Test the link by changing a number in the *Excel* worksheet. The change will appear in the *Excel* chart and in the linked chart in *Ami Pro*.

Sending the Report Through

cc:Mail

The final task is sending the completed sales report to the regional managers via *cc:Mail for Windows*. *Ami Pro* has a handy command to simplify the process. From *Ami Pro*, select *File Send mail* (see **SCREEN 3**). This launches *cc:Mail* if it's not already running and attaches the current document to a message. You can type a cover sheet to accompany the document, specify the mail recipients, and send the message. When you finish, you'll be returned to *Ami Pro*.

Cautions and Caveats

You shouldn't have trouble setting up the link described here. But once you start experimenting more with DDE, you may find that it works better in theory than in practice. The links are relatively fragile: If you move a linked document to another directory or change its file name, you'll cut the link. You'll need to start over or edit the link using a Link Options command.

When you experiment with complex links between multiple applications, don't be surprised to see Unrecoverable Application Errors or other problems. *Windows 3.1* promises to standardize DDE, reducing errors. But if you to use DDE links with earlier versions, the best advice is to save your work frequently. ☺

Contributing editor John Walkenbach is coauthor (with Phillip Robinson) of the PC World Complete 1-2-3 for Windows Handbook (IDG Books, San Mateo, California, 1991).

1991

PC WORLD

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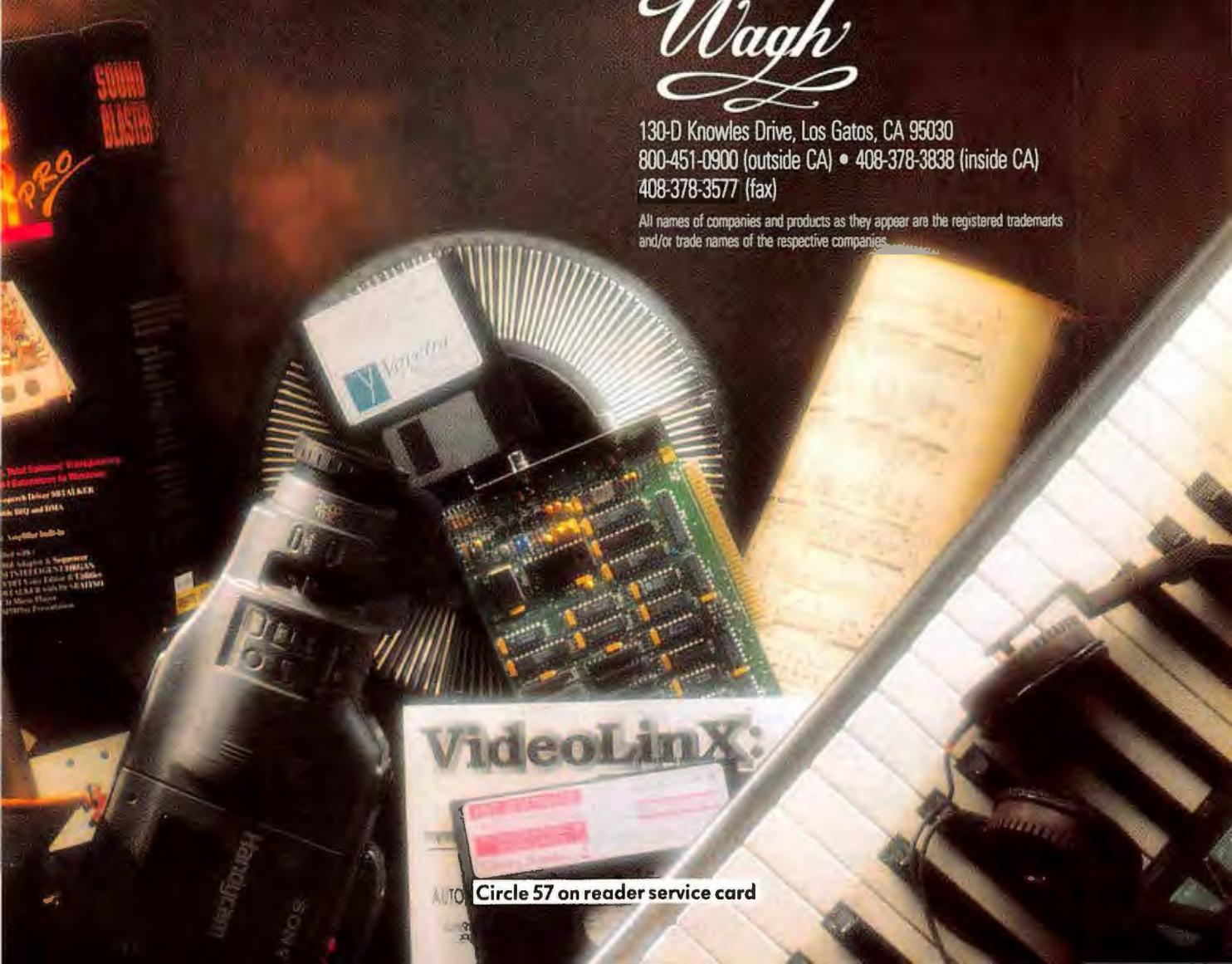
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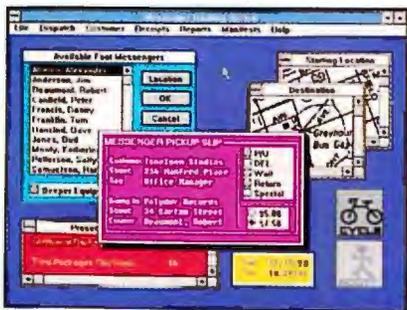


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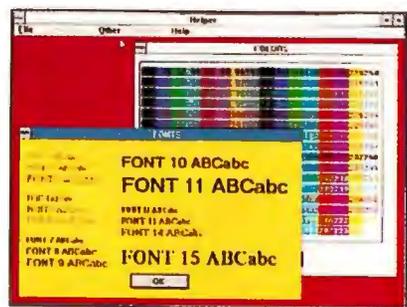
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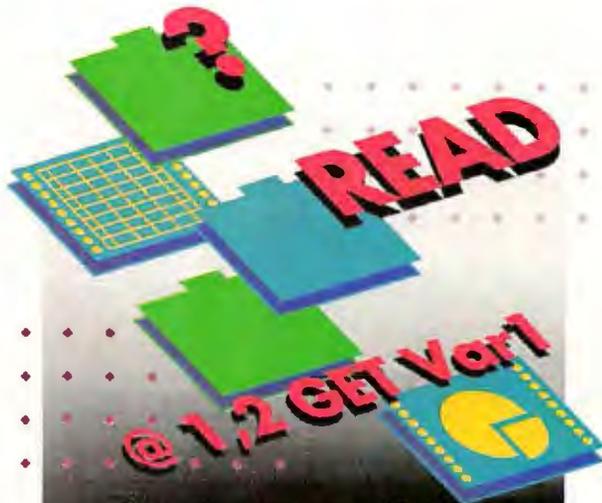
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SPREADSHEETS (A..Z)

Practical tips for building better worksheets

Richard Scoville

Now that the new WYSIWYG interfaces in 1-2-3 2.3 and 3.1 let you decorate your worksheets with fonts, boldface, boxes, lines, and shading, do you find yourself wasting time formatting all the section headings in your 23-page megasheet in Swiss 14 point Bold Italic? If so, remember that Lotus provides styles along with these new spreadsheet publishing capabilities to rescue you from font flipping. This month, we'll show you how to create styles and apply them to multiple worksheets.

A style is a collection of named WYSIWYG text format settings. You define a style by example: When one cell looks the way you want, you use it to define the style. You can then format matching cells and ranges by assigning them that style. If you later change the definition of the style, all the cells formatted with it will change accordingly.

To see how this is done, let's build the simple profit-and-loss statement shown in SCREEN 1. Start with a clean worksheet, and set the global format to (,2) by selecting /Worksheet Global Format and pressing <Comma>2<Enter>. Then enter the labels shown in column A and in B2..C2, and type in the values in

columns B and C. In B5 enter the formula +B3-B4, and copy it to C5: Select /Copy, press <Enter>, move the cell pointer to C5, and press <Enter> again. Similarly, enter the formula for total expenses, @SUM(B7..B15), in B16 and the profit formula +B5-B16 in B18. Copy each formula into column C.

Now for the formatting. First make sure the WYSIWYG add-in is attached: Select /Add-In Attach and WYSIWYG.ADN. If WYSIWYG is already attached, you'll get a message to that effect. Otherwise, select No-Key.

Notice the two different types of special formatting in this worksheet: the headings in A1, B2..C2, A5, A16, and A18; and the boxed totals in B5..C5, B16..C16, and B18..C18. Begin by formatting one cell in each group. (Pressing the colon will activate the WYSIWYG menus.) With the cell pointer on A1, select :Format Font 2 and press

<Enter>; the worksheet title changes to Helvetica 14-point text. To make it bold, select :Format Bold Set and press <Enter>. Then go to B5. Select :Format Font 2 and press <Enter>, then select :Format Lines Outline and press <Enter>.

Now, because each format is used repeatedly, we'll define styles for them. Put the cell pointer on A1, select :Named-Style Define 2, and press <Enter> to designate A1 as the example cell for the style. Enter HEAD as the style name and Helv 14pt Bold as the description. Go to B5 and use the same procedure to define Style 3. Name it TOTAL, and enter the description Outline Helv 14Pt. (Note that Style 1 is the default style: Redefine it, and you change the appearance of all unformatted cells.)

Now we'll use the styles to format the remainder of the worksheet. Go to B2, select :Named-Style 2, paint the range

A1: {HEAD: SWISS14 Bold} [W20] 'Big Cheese Gift Shop

	A	B	C	D	E	F	G
1	Big Cheese Gift Shop						
2		Jan	Feb				
3	Sales	12,435.00	13,456.00				
4	Cost of goods	6,534.00	7,241.00				
5	TOTAL INCOME	5,901.00	6,215.00				
6							
7	Advertising	320.00	450.00				
8	Bank charge	18.00	16.00				
9	Depreciation	212.00	212.00				
10	Dues & Pubs.	46.00	32.00				
11	Insurance	125.00	125.00				
12	Legal & Prof.	209.00	622.00				
13	Supplies	68.00	141.00				
14	Taxes	50.00	50.00				
15	Travel	77.00	390.00				
16	TOTAL EXPENSES	1,125.00	2,039.00				
17							
18	PROFIT (LOSS)	4,776.00	4,177.00				
19							

CHEESE.WK1

SCREEN 1: 1-2-3 styles speed up text formatting. Here we formatted cell A1 with :Format Font and :Format Bold, defined a style based on that cell, and used that style to format the other totals.

B2..C2, and press <Enter>. Repeat the process on cells A5, A16, and A18. Then go to B5, and use the same procedure to assign Style 3 to B5..C5, B16..C16, and B18..C18. Pretty neat, eh?

To format your next worksheet quickly, you can transfer the defined styles. First save this worksheet: Select /File Save, enter a file name not already in your default directory, and press <Enter>. Then clear your worksheet with /Worksheet Erase Yes. To use the styles in your new worksheet, select :Special Import Named-Styles, and select the FMT file for the file you just saved. Verify that your formatting styles are available by selecting :Named-Styles and examining the menu.

Questionable Spreadsheets Department

Q. I read your October column with some interest. I found the macro more complicated than random sampling requires. Suppose you need to sample 10 numbers between 1 and 100. I enter 100 numbers, shuffle them with /Data Sort, then cull the first 10 numbers from the sorted list.

Here's how it might work: Start with a blank worksheet. Create a list of 100 integers: Select /Data Fill, enter B1..B100 as the range to fill, then enter 1 for the start value, 1 for the step value, and 100 as the stop value. Now, give each integer a random index value: Go to A1 and enter @RAND. Then copy the formula for each number in column B: Select /Copy, press <Enter>, then enter A2..A100 as the range to copy to.

Next, with the cell pointer still in A1, sort the numbers using the random values as the key: Select /Data Sort Data-Range, point the range A1..B100, and press <Enter>. Select Primary-Key, press <Enter> to designate column A as the key column, type A, press <Enter>, and select Go.

At this point, you've randomly shuffled 100 numbers. To get your sample, take the top 10 values from column B.

Richard Allen
Palos Park, Illinois

Spreadsheet Toolbox

Monologue Worksheets Read Themselves Aloud

If you key lots of data into your worksheets, you probably proof your work by checking it against the original data sheets as a colleague reads back the numbers. It's a drag, but there's no alternative, right?

Wrong. Now there's *Monologue*, a \$149 speech synthesis program from First Byte. In the DOS version (compatible with any text-mode app), you select a section of the screen, then *Monologue* reads it aloud in a clear (though slightly comical) male voice. In the newly released Windows version, you

select a range in Excel, click on an icon, and *Monologue* reads the range back. (This version of *Monologue* can also read text that has been cut or copied to the Windows clipboard.) The utility can talk through your computer's speaker but sounds a lot better if you have a sound board.

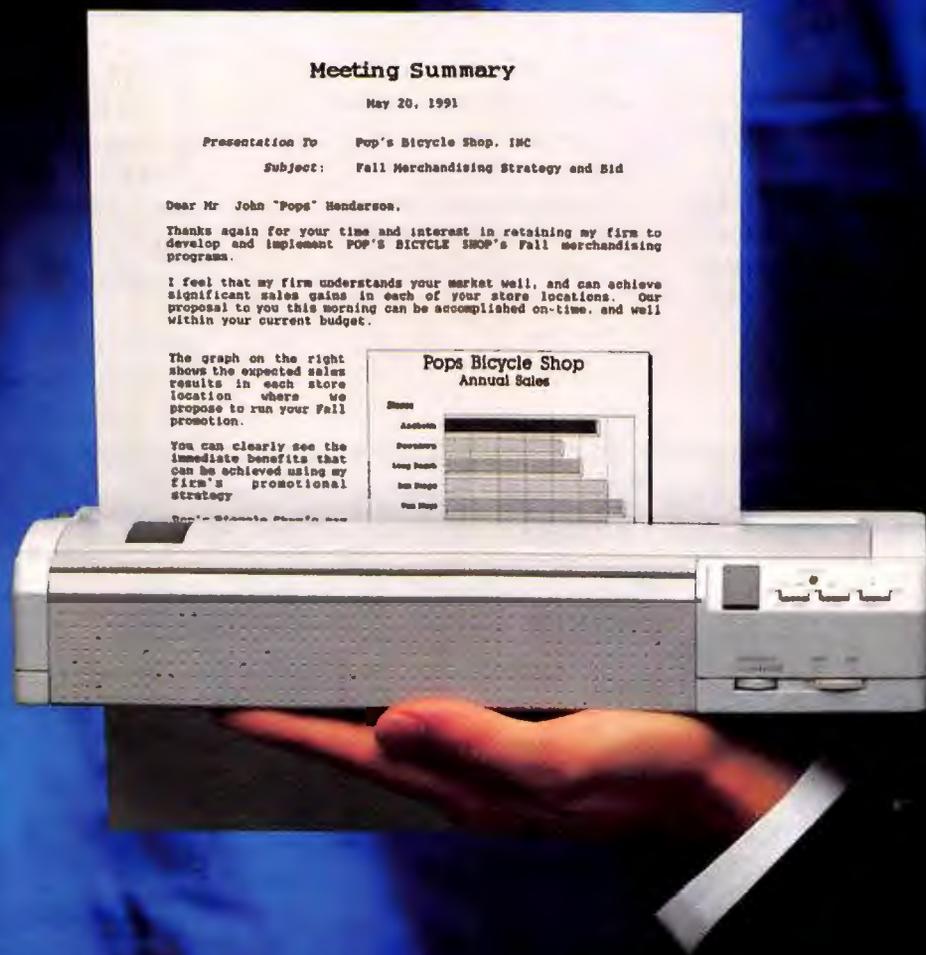
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	B	C
1		
2	\V_CT_1	
3	\V_CT_2	
4	\V_LOWER	1
5	\V_UPPER	10
6	\V_N	10
7	\V_SORT? n	
8		
9	\R	{}
10		{paneLoff}
11		{getnumber "Number of values? ",\V_N}
12		{if @iserr(\V_N)}{quit}
13		{getnumber "Lower limit? ",\V_LOWER}
14		{if @iserr(\V_LOWER)}{quit}
15		{getnumber "Upper limit? ",\V_UPPER}
16		{if @iserr(\V_UPPER)}{quit}
17		{getlabel "Sort the List? (Y/N) ",\V_SORT?}
18		{if \V_N>\V_UPPER-\V_LOWER+1}{beep}{quit}
19		/rncTARGET{bs}. {d \V_N-1}
20		{if @count(TARGET)>0}{beep}/rndTARGET{quit}
21		/wic{r}
22		/df{bs}. {d \V_UPPER-\V_LOWER}
23		\V_LOWER-1\V_UPPER
24		{r}@rand{/c}. {L}{end}{d}{r}
25		/dsrd.{end}{down}{L}~p~a~g
26		{L}/c{d \V_N-1}~TARGET
27		/wdc{r}
28		{if @upper(\V_SORT?)="Y"}/dsrdTARGET~pTARGET~a~g
29		/rndTARGET
30		{indicate}

FIGURE 1: This <Alt>-R macro quickly produces a list of unique random numbers.

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Excel Shortcut

Watch the Bottom Line

Ralph Soucie

Neatness counts in spreadsheet work. Here's a macro that formats neatly underlined column totals in a jiffy.

First, enter the following formulas in a macro sheet (leave a blank cell at the top):

=BORDER(0,0,0,1,6,,,,,0,0)

=ROW.HEIGHT(18)

=RETURN()

In the cell above the BORDER function, enter a name for the macro. Leaving the cursor on that cell, select *Formula Define name*, click the *Command* button at the bottom of the dialog box, enter a

letter in the *Key* box (for this example, we'll use *T*), and click *OK*.

To test the macro, open a new worksheet and fill the range B3:E12 with numbers. Then select the range B13:E13 and press <Ctrl>-T.

The macro draws a single border at the top of the range (underlining the columns), increases the row height (separating the totals from the columns), and draws a double border at the bottom (double-underlining the totals). Now just double-click the *Autosum* button in the toolbar to display the total.

A. Your method is slick, and far more efficient than the macro I suggested. Thanks.

For readers who want to incorporate this sampling method into October's macro example, **FIGURE 1** shows a revised version that uses Mr. Allen's method. See the October column for expanded explanation. One obvious caution: The sheets in which you use the macro should not already use the range name **TARGET** or those shown in column B.

Send your spreadsheet questions to Richard Scoville, CompuServe 72341,2727; MCI Mail 357-4517; 415/442-1891 (fax); or mail them to Spreadsheets (A..Z), PC World, 501 Second St. #600, San Francisco, CA 94107. PC World will pay \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☉

Richard Scoville and Ralph Soucie are contributing editors for PC World.

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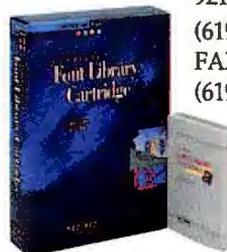
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AGFA 



WORD PROCESSING CLINIC

Tips for getting the most out of your word processor

George Campbell

Q. *I use Word for Windows along with Adobe Type Manager, and I really like the combination. However, Word for Windows lets me choose only even-numbered font sizes, with a limit of 48 points. Is there a way to use other font sizes?—Yvonne Markham, Bloomington, Illinois*

A. Sure there is. *Word for Windows* limits you to even-numbered fonts in its list boxes, but it's easy to cheat. Just click inside the font size box on the ribbon, change the current size to the one you want, then press **<Enter>**. You can choose any size between 4 and 127 points, in half-point increments. The Format Character dialog box works the same way.

Don't try this trick on fixed-sized internal printer fonts, such as the Hewlett-Packard LaserJet's Line Printer font. *Winword* and *ATM* will let you set a new size, and deceive you by displaying it. When you print, though, the font appears in its default size.

Q. *I'm using WordPerfect 5.1 to create an employee handbook for my firm. We have a Hewlett-Packard LaserJet*

IIIid printer, which can print on both sides of the page, but I need to shift the margins to allow for hole punching. How do I do this?—Elizabeth Esposito, San Bernardino, California

A. *WordPerfect's* Print Menu lets you print pages that will be bound. To set this up, press **<Shift>-<F7>**, and press **B** to alter the binding offset for your document. Enter a figure in inches, such as .5, to offset the left and right margins, then press **<F7>** twice to return to the document.

There's a trick to this, though: When you set a binding offset in *WordPerfect*, it simply shifts the text—to the right on odd-numbered pages and to the left on even-numbered pages. This alters the opposite margin as well, making your layout inconsistent. To make sure your left and right margins are set at the proper width, press **<Shift>-<F8>LM**, then enter new figures for the left and right margins, adding half the amount of the binding offset to each. In other words, if your basic margins are 1 inch, and your binding off is ½ inch, reset your left and right basic margins 1 ¼ inches. Then press **<F7>** to return to the editing screen.

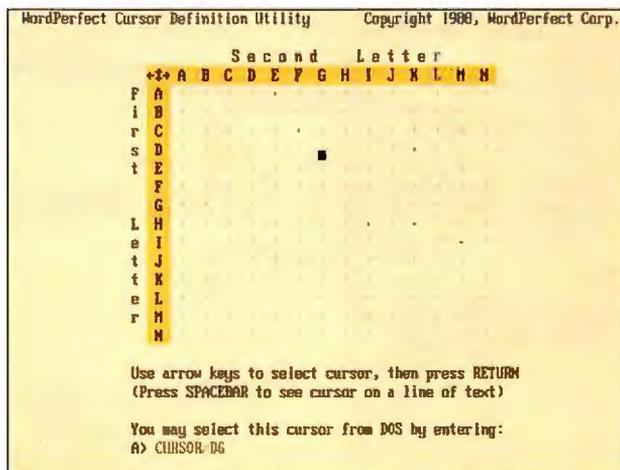
Before printing your document, check out the layout on *WordPerfect's* print preview screen. Just press **<Shift>-<F7>V4** to preview facing pages, and you'll be able to see a clear picture of your layout.

Q. *I'm using WordPerfect 5.1 on a laptop, and hate the tiny, almost invisible cursor. Is there any way to alter WordPerfect's basic cursor?—Steven Jacobs, Milwaukee, Wisconsin*

A. Lucky you! *WordPerfect 5.1* includes a utility that can set the cursor to almost any shape you like. The utility, called *CURSOR.COM*, is normally installed in your *WordPerfect* directory. If it's not there, use the installation program on your original disks to install it.

To alter your cursor, exit *WordPerfect*, and enter the command **CURSOR** in your main *WordPerfect* directory. You'll see a grid on the screen. Use the cursor keys to move around the grid, displaying all possible cursor shapes. When you see one you like, press the space bar to see how it looks in a line of text, then press the space bar again to return to the grid.

The bottom line on the screen displays the command needed to set this cursor style. Make a note of the command, which will look like **CURSOR/xx** (where *xx* are the letters describing the grid coordinates). Then press **<Enter>**



Attention laptop users: Need a cursor that's easy to see? WordPerfect 5.1's CURSOR.COM utility lets you select a larger cursor shape or size.

to exit the program. You'll see your new cursor on the screen, even at the DOS command line.

To make sure your cursor stays the way you like it, start *WordPerfect* from a batch file, such as:

```
CD\WORDPERFECT
CURSOR/xx
WP
```

This retains the cursor you selected whenever you run *WordPerfect* or return to DOS.

Q. *I'm often away from my desk. How can I keep my WordPerfect 5.1 documents confidential?* —Louis Franklin, Phoenix, Arizona

A. *WordPerfect 5.1* offers good password protection. To protect a document, load it into *WordPerfect*, then press <Ctrl>-<F5>PA. Type your password, press <Enter>, and then type it again. From then on, you must enter the password to view the document.

To protect a file from being accidentally deleted, use the DOS ATTRIB +R command. Exit *WordPerfect*, go to the file's directory, and enter the DOS command ATTRIB +R filename.ext, substituting the file name where indicated. *WordPerfect* can still read the file, but you can save changes to the file only by giving it a different name. If you ever want to reverse this protection, use the command ATTRIB-R filename.ext.

To ensure even tighter security, it's best to save your documents onto floppy disks that are stored in a secure area.

Q. *Is there a way to create a special dictionary for Word 5.5 that watches for overused and misused words and phrases?*

David S. Gunzel
Fort Worth, TX

A. While there's no way to do this inside *Word 5.5*, there's still an answer. Grammar checkers, such as *Grammatik IV*,

allow you to create your own usage rules. Many commonly misused words and phrases are already built into these programs, but you can add your own.

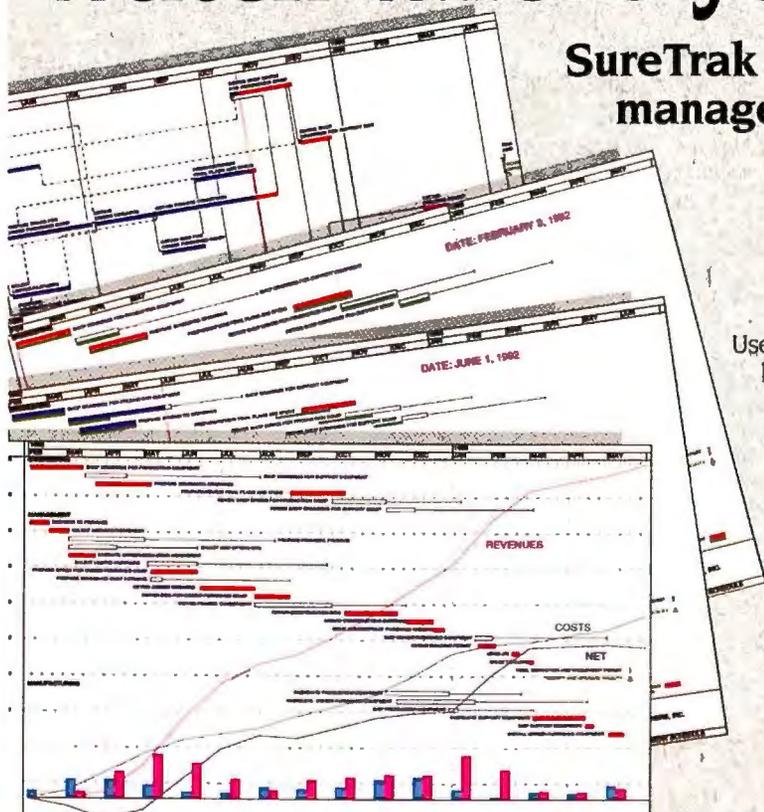
Best of all, *Grammatik IV* and other grammar checkers work directly with most popular word processor files, eliminating the need to convert files to ASCII format. If you're looking for a built-in product, *Word for Windows 2.0* includes a customizable style and grammar checker.

Send your word processing questions to George Campbell, CompuServe 71571,222; MCI Mail GCAMPBELL; 415/442-1891 (fax); or mail them to Word Processing Clinic, PC World, 501 Second St., San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☹

George Campbell is a contributing editor for PC World.

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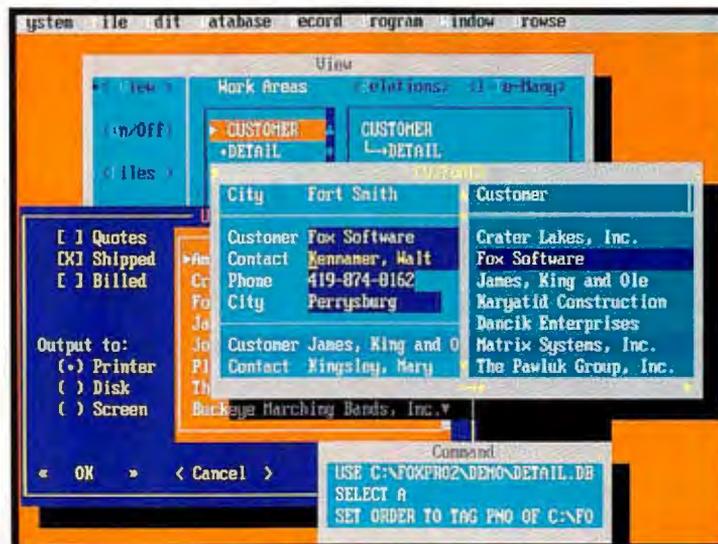
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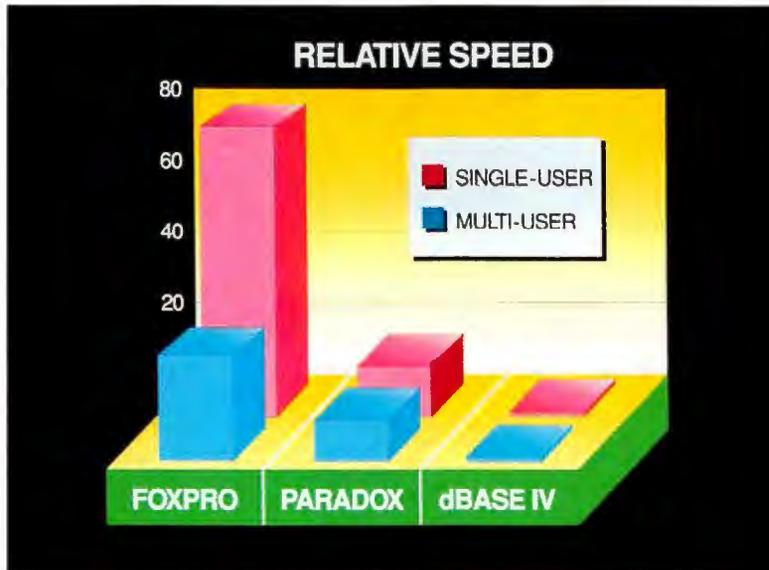
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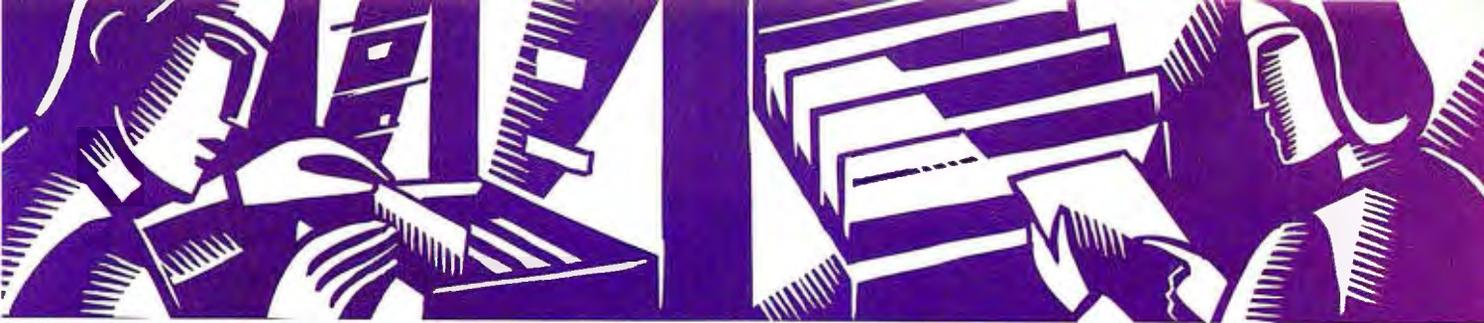
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DATA BASICS

Tips and techniques for managing your data

Steve Cummings

Q. We want to create a dBASE IV master inventory list by combining existing files from three separate departments. The trouble is, each department developed its own data base independently. Any suggestions?

Bill Borger
Deerfield, Wisconsin

A. Your first step is to create a master data file for the combined records. In designing the structure, consider which fields you'll need out of all three files, and pick the most reasonable name and length for each of them. Don't worry if the field names and lengths don't match those in your original files. A warning about field length: If one file's Descrip field is 35 characters long and another's Desept is 25, use 35 characters in the final structure, or you will lose data.

The easiest way to copy data into the master file is through the query screen. From the Control Center, open the new master file by highlighting it in the Data panel, pressing <Enter>, and selecting *Use file*. Move to the Queries panel, and select *Create*.

Once you're in the query screen, select *Update Specify update operation*

Append records Proceed. dBASE will display the notation 'Target' above the file's name. Select *Layout Add file to query*, and then choose one of the original files; its file skeleton will appear below the master file's.

Now it's time to let dBASE know which field in the old file corresponds to which field in the new one by typing identical labels in each—it doesn't matter what label you choose, so long as you use the same one. For instance, if the price is in the field ListPrice in the old file and Price in the new one, type in the word **Price** under 'Price' in the target file and under 'ListPrice' in the source. Once you've labeled all the fields in the master file and their corresponding fields in the source, select *Update/Perform the Update*. To view the master file and verify the transfer, press <F2>.

You can go through this process with only one source file at a time. And you

will have to repeat these steps with each of the other original files.

Q. I've been typing lengthy comments into a NOTE column in my R:Base data base. I'm now planning to build a form so that I can enter information into several related tables at once. How should I set up the form so that I can type in notes as long as I like?

Lona Simpson
Reno, Nevada

A. It's easy to put a scrolling, multiline note field into a form. (In *R:Base*, the fields in a data base table are called "columns;" only the typing areas in a data entry form are called "fields".) Such a field acts as a window on your note, allowing you to scroll through.

To create such a field at the Form Building screen, press <F6> and enter

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H011	2/08/91	UCR	108	9	275.00	\$2,475.00
H017	2/08/91	Turntable	106	6	215.00	\$1,290.00
H021	2/08/91	Speakers	101	85	250.00	21,250.00

Putting a note field into an R:base form lets you store comments and other information that would not otherwise fit into your data structure.

Reader Tips

Changing Paradox's Default Directory

If you want to keep your Paradox data tables in a separate directory from your program files, you should make the data directory Paradox's default. That way, every time you load Paradox, your data files will be close at hand.

To change Paradox's default directory, start at the DOS prompt in the directory containing Paradox's program files (probably C:\PDOX). Enter the command PARADOX CUSTOM, which loads Paradox along with a PAL script

that lets you set a great many defaults. From the menu, select *Defaults SetDirectory* and type in the name of your data directory. Press <Enter> and select *Return DO-IT* to save the change, then *HardDisk* or *Network*. This will bring you back to the DOS prompt. Now when you start Paradox, the program will always look first in the directory that your tables are in.

*Willa Johnson
Corpus Christi, Texas*

"word wrap"), then to the bottom right corner and press **E**. Your field must be rectangular—when you press **E**, the cursor must be directly below where you pressed **W**. Select *Exit* to save.

By the way, you can use a similar method to print notes in your reports. When defining the corresponding field, press **S** at the top left corner and **W** at the top right. This time, press <Esc> to tell *R:Base* to print as many lines as necessary for the entire field contents.

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the name of your NOTE column—you can type it, or press <Enter> and select the column name from a list. You don't have to define an expression or cus-

tomize field settings. Move the cursor to the top left corner of where you want the new field to be and press **S**, then to the desired top right corner and press **W** (for

Steve Cummings is the author of Understanding Quicken (Sybex, Alameda, California, 1990) and a PC World contributing editor.

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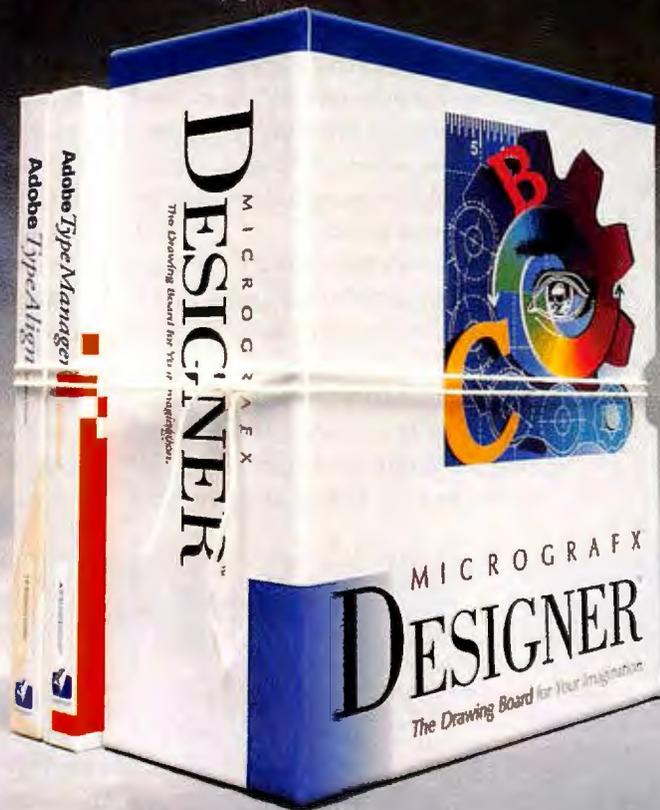
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PUBLISHING & PRESENTATIONS

Expert advice for creating high-impact documents and presentations

Richard Jantz

Marketing and sales materials promoting a company's products or services are among corporate America's most common publications. But with so many documents competing for attention, a marketing publication must stand out and make its point quickly.

This month's make-over is a one-page marketing quarterly published by Econometric Software of New York. The double-sided report's main purpose is to provide information about new company products and upgrades. Although the original design is well organized and uses spot color to grab attention, the

publication lacks distinction, and the elements are crowded and uninviting. Also, article headings are overbearing and too similar in weight to tell which item is important or what the key message is.

Our first step was to redesign the document's *nameplate*, or banner, to strengthen the publication's identity. We replaced the blocky typeface used for the company name with a sleeker, more elegant style and printed it in reversed type (white letters on a black background). We shortened "Newsletter" to "News" to describe the document's purpose more accurately and used spot

Before

After

A much wider left margin (1½ inches instead of ½ inch) provides more white space and narrows each column width (from 14½ picas to 12). To ensure the text is still readable, we change the original 12-point Times Roman to 10-point ITC Garamond Light Condensed and increase leading from 12 to 13 points.

The heavy 18-point Helvetica Bold headings in the original become 36-point ITC Garamond Light Condensed, and their thick horizontal rules are changed to more subtle and space-saving dotted lines, printed with spot color.

To highlight the beginning of each article, we add a large capital letter (56-point Univers Ultra Condensed Bold) printed in spot color and set the first paragraph in 10-point ITC Garamond Ultra Condensed Bold Italic.

The pull quote, in 12-point Univers Ultra Condensed Bold reversed type, is prominently displayed in the left margin. Printing the box in spot color ensures that it gets noticed.



color and a different typeface to make the banner stand out. We also exaggerated the jagged line used in the original to make the nameplate more dynamic.

To give the document breathing room, we widened the left margin, narrowed the column widths, and eliminated the contents box—unnecessary for a single-sheet document. To improve text readability, we changed to a condensed typeface, reduced point size from 12 to 10, and added vertical rules.

Finally, instead of using spot color for headings—already prominent due to their size—we used it for other ele-

ments: the dotted lines that organize the information, the large initial capital letters that draw people into the news items, and the *pull quote* (short text excerpt) that highlights the publication's key message.

The original Econometric newsletter was far from a design disaster, but if you want striking marketing materials, every little improvement counts.

Send your publishing and presentation questions as well as business document and presentation make-over candidates to Richard Jantz, MCI

Mail R.JANTZ; 415/442-1891 (fax); or mail them to Publishing & Presentations, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☹

Contributing Editor Richard Jantz is the author of Ventura Publisher 4.0 for Windows (John Wiley & Sons, New York, 1991). Graphic designer Larry Westdal of Westdal Design Associates in Berkeley, California, created the make-over for this article.



The redesigned nameplate identifies the company and publication more effectively. ITC Garamond Light Condensed Italic in 60-point reversed type replaces 40-point Avant Garde Bold Italic for the company name; 29-point Univers Extra Black Italic supplants 30-point Times Roman Bold for the word "News."

Most publishing programs provide drawing tools for creating a graphic device such as this jagged line. Alternatively, you could create this with an illustration program and import it into a page layout or word processing program.

The original doesn't make clear that the graph is used simply to break up the text. But by moving copy ("Reviews") from the second page to the first, the illustration's purpose is more obvious.

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Circle 10 on reader service card



COMMUNICATIONS Q & A

On-line resources for business and professional users

Judy Heim

Q. *I download stock quotes from Prodigy, but the software I use is a real hassle. Are there any utilities available that make the process less onerous?*

—L. Sullivan, Redwater, Texas

A. FlexSoft of Dublin, California, offers three programs for snatching stock quotes off Prodigy and massaging them. The *Prodigy Downloader* (\$20) captures up to 1000 ticker prices in ASCII format. You start *Downloader* and feed it a list of ticker symbols. Then it goes to work loading Prodigy software, logging onto the service, and capturing the quotes. You can even set it to log on automatically at a specified time, even when you're not around.

The *Prodigy Metastock Loader* (\$30) converts Prodigy's daily quotes into the format used by Equis International's *Metastock*, the leading PC stock analysis software. It will also convert daily quotes from CompuServe and historical ones from Dow Jones into *Metastock* format.

The *Technical Analysis Scanner* (\$150, or \$200 with built-in graphing) performs preanalysis screening of downloaded quotes. You plug in a list of

ticker prices, and *TAS* scans them for indicators that you specify. Then you can shuttle the stocks that interest you into stock charting software like *Metastock* for further analysis.

These three products are shareware, which means you can try before you buy. They can be downloaded from FlexSoft's BBS at 510/829-2293. Look for PDL31.ZIP for *Prodigy Downloader*, PML420.ZIP for *Prodigy Metastock Loader*, and TAS407.EXE for *Technical Analysis Scanner*. FlexSoft can be reached at 7172 Regional St. #276, Dublin, CA 94568; 510/829-9733, 510/829-9733 fax. Reader service no. 620.

Q. *Can you explain what an on-line gateway is?—Len Duckwitz, Mechanicsburg, Pennsylvania*

A. In the on-line world, a thousand doors can lead to the same treasure. A gateway is any link between services that lets you access one on-line service from inside another one. Usually you go from a large service like CompuServe (CIS) to a smaller, more specialized data base or service, and you may not even notice you're using a gateway. For instance, if you dial CIS and access the Official Airline Guides (OAG), the only clue that you've passed through a gateway, which you have, is that OAG incurs an extra charge.

You can access services like Dow Jones/News Retrieval or OAG from different on-line services. The difference in cost between accessing a data base on one service and dialing into it from another can be dramatic. But most vendors won't tell you the cheapest way to tap into their data base, because they don't want to recommend one service over another.

To find the cheapest gateways, ask the vendor for the names of *all* the on-line services from which their data base can be tapped. Then call those services and ask for prices. Be sure to tally hourly connect charges, subscription fees, monthly minimums, and character and document fees.

Q. *Are there any newsletters or other publications that will teach me how to use on-line services to make investments?—Louis Sylvania, Crystal, West Virginia*

A. The American Association of Individual Investors publishes a bimonthly newsletter called *Computerized Investing*, which regularly reviews on-line services that may be of interest to amateur investors. In addition, the AAI sponsors PC investor clubs in 30 cities around the country, where you can mingle with other financial modemites. A subscription is \$60 a year, or \$30 with an AAI membership. Contact the AAI on their BBS at 312/280-8764, or at 625 N. Michigan Ave. #1900, Chicago, IL 60611; 312/280-0170, 312/280-1625 (fax). Reader service no. 621.

Send your communications questions to Judy Heim, CompuServe 71570, 3712; GENIE JUDY.HEIM; MCI Mail 312-7737; Internet 3127737@MCI-MAIL.COM; 415/442-1891 (fax); or mail them to Communications Q&A, PC World, 501 Second St. #600, San Francisco, CA 94107. PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☺

Judy Heim is a contributing editor for PC World.

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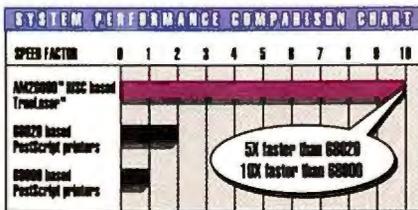
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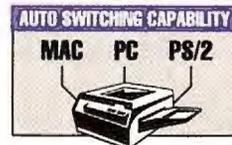
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Circle 162 on reader service card



WINDOWS WORKSHOP

Practical answers to your questions about Windows

Jesse Berst and Scott Dunn

Perking Up Print Manager

Q. *Print Manager is supposed to speed up my printing, but as a spooler it seems singularly sluggish. What can I do to accelerate printing from Windows applications?*

*Barbara Roll
Auburn, Washington*

A. The answer depends on what you want to speed up—printing your document or regaining control of your Windows application after printing begins.

If you want faster output from your printer, disable Print Manager entirely. Open the Control Panel, double-click the Printers icon, and uncheck the Use Print Manager box.

On the other hand, if you just want to get back to work quickly, try this: First, create a RAM disk with the RAMDRIVE utility that comes with Windows. For example, to create a 1MB RAM drive in extended memory, you'd insert this line in CONFIG.SYS after the line that installs HIMEM.SYS:

```
DEVICE=C:\WINDOWS\RAMDRIVE.SYS 1024/E
```

Next, in your AUTOEXEC.BAT, create a TEMP directory on the RAM drive. RAMDRIVE automatically as-

signs itself the drive letter following that of the last actual drive. If the RAM drive is E:, you would add the following lines to AUTOEXEC.BAT:

```
MD E:\TEMP  
SET TEMP = E:\TEMP
```

This forces Windows to spool print files to RAM rather than to disk, which can turbocharge output.

(Another speed tip: If you need to work while printing, you can boost your application's speed by opening Print Manager and choosing *Low priority* from the Options menu. This slows down printing but lets you work faster.)

Warning: Don't try the RAM drive trick unless you have at least 4MB of RAM, preferably 8MB. The TEMP

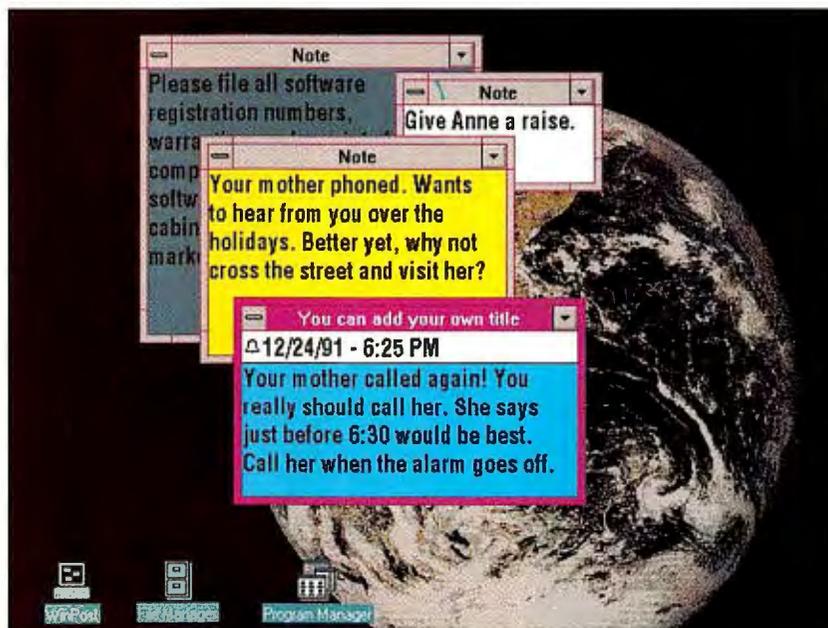
directory you set up will be used not just by Print Manager but also by Windows and Windows applications. The RAM drive should be at least 1MB, and at least 2MB if you use graphics applications such as *PageMaker* or *Corel Draw*.

Out of Memory Blues

Q. *I run Windows in 386-enhanced mode. One of my DOS applications needs 1MB of expanded RAM, so I specified 1024K of EMS memory in the KB Required field in its Advanced Options PIF file. But I'm still getting 'Out of memory' messages from my application. What's going on?*

*Dolores Grimes
Augusta, Georgia*

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A. Believe it or not, *Windows* can't do math as well as a \$3 calculator. Because of the idiosyncrasies of EMS calculation, you have to ask for more memory than you really want. Tell your PIF to provide 1536K of expanded memory, and you'll be giving your program the 1024K it needs.

Drive A: to WordPerfect, Drive A: to...

Q. When I run WordPerfect 5.1 inside Windows, I get error messages when I try to access my floppy drives (A: and B:). This doesn't happen when I run WordPerfect outside Windows. What gives?

Janet Jensen
Washington, D.C.

A. This is a problem with WordPerfect 5.1. If you have the latest version of WordPerfect, you can correct it by typing /C or /P in the Optional Parameters field of WordPerfect's PIF file.

EPS In, Garbage Out

Q. I can't seem to import some EPS files into PowerPoint for Windows. What am I doing wrong?

Anita Anders
Cooperstown, New York

A. Nothing. Most graphics programs can't import or display an EPS file unless it's accompanied by a TIFF image of the file. Use a program like Hotshot to convert the EPS file into a TIFF image, or pull the EPS file into Corel Draw and export it with the Include Image Header option checked.

Mouse Troubles

Q. I am having a problem using my mouse in 386-enhanced mode. It works fine with Windows applications and DOS applications running full screen. But when I run a DOS application in a window, the mouse dies.

Sarah Scot
Seattle, Washington

A. This limitation is normal in the hand-to-mouse existence of *Windows* users. When a DOS application runs in a window, *Windows* gets dibs on the mouse. You can use the mouse at this point only for transferring data to the Clipboard. (Just click in the window, and you'll see 'Select Program' appear on the title bar; drag to select the area to copy.) For other jobs, you'll have to give your mouse a rest.

Send your Windows questions to Windows Workshop, PC World, 501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail 179-3813; or 415/442-1891 (fax). PC World pays \$50 for published questions. Sorry, we cannot acknowledge submitted materials. ☺

Jesse Berst is a contributing editor for PC World. He and Scott Dunn are coauthors of 101 Windows Tips (Peachpit Press, Berkeley, California, 1991).

May 1991
Mike's Airline and Fun Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 Fla. Springbreaks	2 Bil. Copper Mts. Race	3 Bil. Copper Mts. Race	4 Kinetic Sculpture Race in Boulder
5 San Jose State "Aero-Crash" Beach Party Santa Cruz	6 3:11pm DEN-STL :25 STL-DEN 8:13pm	7 3:11pm DEN-STL :25 STL-DEN 8:13pm	8 3:11pm DEN-STL :25 STL-DEN 8:13pm	9 3:11pm DEN-STL :25 STL-DEN 8:13pm	10 OFF	11 Work on Car
	Home each night			Los Angeles		
12 Target Practice	13 9:40am DEN-SEA :34 SEA-LAX 3:34 LAX-PDX 8:47pm	14 3:40pm PDX-LAX 1:30 LAX-DEN 10:42pm	15 3:11pm DEN-STL :25 STL-DEN 8:13pm	16 3:11pm DEN-STL :25 STL-DEN 8:13pm	17 Lima, Peru, Turin, Bermuda Shorts night on the beach	
19 Baha	20 9:40am	21	22 3:11pm DEN-STL :25 STL-DEN 8:13pm	23 3:11pm DEN-STL :25 STL-DEN 8:13pm	24 John in Town for 3 days	
	OFF			OFF		
27 Suzanne in Town for 3 days	28 3:11pm DEN-STL :25 STL-DEN 8:13pm	29 3:11pm DEN-STL :25 STL-DEN 8:13pm	30 3:11pm DEN-STL :25 STL-DEN 8:13pm	31 Trav for 150mi bike ride in July		
	OFF			beach night		

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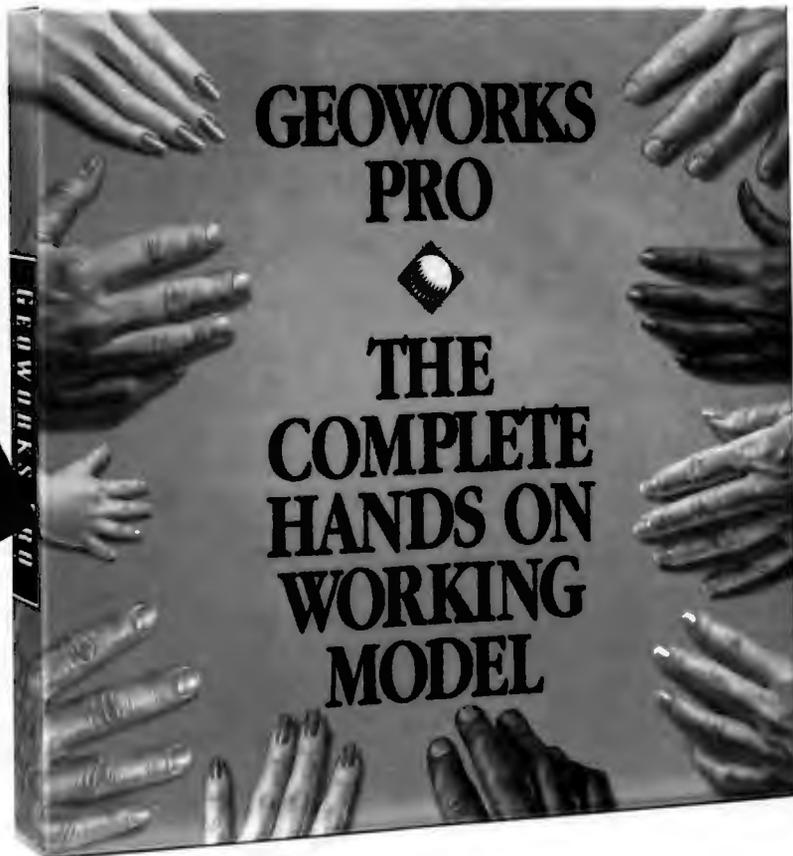
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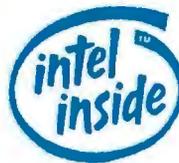
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Circle 290 on read-





USER GROUP TIPS

Helpful hints from members of the nation's user groups



PAMELA HOBBS

Printing Directory Listings

Disk space is getting short, and it's time to clean out some of those old work files. But when you change to the first directory and enter DIR at the DOS prompt, file names fly by in a blur. You press <Ctrl>-C to stanch the flow and press <F3> to repeat your last DOS command. Add the /P switch you left off and press <Enter>. The DIR/P command scrolls your directory one screenful at a time. So now you can just strike a key when you want to see the next screen. But how do you remember which files to delete when you get back to the DOS prompt? Simple. Just enter DIR>PRN at the DOS prompt, and then walk over to the printer to pick up a printout of your directory, complete with file sizes, dates, and times.

Cary Jensen and Loy Anderson
HAL (Houston Area League)

A Quick File Cleanup

That new utilities disk might have the right stuff to handle several vexing problems. Even though you're on a deadline, you're eager to try one or two utilities right away. So you quickly copy the files to your hard disk. Then you realize you forgot to create a directory for the new files, so you now have a mess of new files mixed in with those already stored in the current directory. The new files lack common names or extensions, so you enter DIR A: to read a few file names, then delete a few from the hard disk...all the while thinking there must be a quicker way. There is: Change to the target directory on the hard disk, and with the utilities disk in the A: drive, enter the command FOR %A IN (*.*) DO IF EXIST A:%A DEL %A. Sit back and watch only the unwanted files disappear. Then place the line FOR %A IN (*.*) DO IF EXIST A:%A DEL %A in a batch file to handle contingencies.

Bob Kelley
Tucson Computer Society

Copying 1-2-3 3.1 Ranges

Most 1-2-3 3.1 users have trod the upgrade path from 1-2-3 2.x, so most use the familiar File Combine command to copy a range from one worksheet to another. Instead, take advantage of 1-2-3 3.1's expanded capabilities: Use /File Open Before and open the source worksheet in front of the target worksheet. Press <Ctrl>-<Page Up> to return to the target worksheet. Make sure you have enough space allocated to accommodate everything you're bringing in. Then place your cursor at the top left corner of the range you've set aside for copied data. Select /Copy and press <Esc> or <Backspace>. Then press <Ctrl>-<Page Down>. Press <Period>

to anchor the range, highlight the area you want to copy, and press <Enter> twice to copy the data and return to where you were in the target worksheet.

Hugh Hand
IBM Users Group
Kamloops, British Columbia,
Canada

Taking Some Space Around WordPerfect 5.1's Reveal Codes

WordPerfect 5.1's Reveal Codes has its adherents—but even fanatics like me object to the cramped default text window. I like to see all my codes spelled out, so I set up a large editing area and a small Reveal Codes window.

To change the size of your Reveal Codes window for a single session, press <Alt>-<F3><Ctrl>-<F3>W and enter the number of lines you want reserved for normal text. Or instead of entering a number, press <Up> or <Down> to increase or decrease the size of your Reveal Codes window. Press <Enter> when you're satisfied. To change the size of your Reveal Codes window permanently, press <Shift>-<F1>DER. Enter the number of lines you want to give up to the Reveal Codes window. Press <F7> when you're finished.

Read Gilgen
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Edited by Brett Glass

Unconditional Save for 1-2-3

File-saving 1-2-3 macros present a problem: When you write the macro, you don't know whether the user will be given a 'Cancel or Replace' option. For instance, the macro statement `'/fsWIDGET~'` will save the current worksheet under the name WIDGET—*if* WIDGET.WK1 is not already in existence. But when the macro is used to save the file a second time, 1-2-3 will ask the user whether the current version should be replaced.

There is a solution: With the help of the {OPEN} and {CLOSE} macro commands, you can ensure the existence of a file to be overwritten by creating one automatically. This two-line macro demonstrates the technique:

```
{OPEN "WIDGET.WK1",W}{CLOSE}
/!sWIDGET~r
```

The {OPEN} command tells the program to open a file named WIDGET.WK1 for output. {CLOSE} then closes the file unchanged. If the file doesn't already exist, these two commands create it—empty and ready to be overwritten. The next line instructs 1-2-3 to save the worksheet file, replacing the file already on the disk.

This technique can be used whenever a macro uses a command that writes to disk, such as File Save, File eXtract, and Print File.

*James R. Knoblock
Bridgeport, West Virginia*

The Viper: Superclean File Wipes

When you delete a DOS file, nothing is actually removed from the disk. While this gives you the opportunity to unerase your files, it also means that anyone with the right software can examine your confidential, "destroyed" data. Both *The Norton Utilities* and *PC Tools* come with utilities that can erase files beyond all hope of recovery. But if you don't have one of these collections, you can accomplish the same thing with my WIPE program.

When you run WIPE, give it the name of your file as a parameter. Once you've verified that you really want to delete the file, it's wiped according to U. S. Department of Defense standard DOD 5220.22M for destroying confidential data. The file is first overwritten with 0s, then 1s, three times. It's then overwritten again with a random value. I've added one step not specified by the DOD: The name of the file is changed to X prior to deletion. This makes it more difficult to recover the file with an unerase program. Why? Because many such programs can't restore more than one deleted file per directory with a one-character name.

*Vincent D. O'Connor
Babbitt, Minnesota*

Editor's note: Mr. O'Connor's original BASIC program couldn't wipe files greater than 64K. However, it seemed like such a good idea that I decided to rewrite it in Turbo Pascal, taking ad-

vantage of Pascal's better file handling (see LISTING 1).

After compiling the program, move it to a directory listed in your AUTO-EXEC.BAT file's PATH command. One caveat, though: If you have a disk cache that has delayed writes, it may prevent this utility from scrubbing the disk more than once. If you use such a cache, disable it before wiping files.

Sub-Rosa Subdirectories

Here's a simple, effective way to protect your subdirectories from prying eyes. When using the MKDIR or MD command, add some blanks (by holding down the <Alt> key and typing 255) to the end of the file name. For example, at the C> prompt, type MD NEW, then press <Alt>-255 and then <Enter>. This will generate one blank character to the right of the subdirectory name NEW. (You can generate more blanks if you like. The whole directory name including the invisible characters must not exceed eight characters plus a three-character extension.)

Whenever a user tries to enter CD \NEW without entering the blank character (or the correct number of blanks), an 'Invalid directory' message will appear. Of course, this method is not foolproof, but it offers some cheap and basic security right out of DOS itself.

*Winston Wan
Houston, Texas*

Escape From DOS

I was tinkering with ANSI.SYS's special escape sequences and found myself wishing for an easier way to invoke them from a batch file. After all, ANSI.SYS can do a lot of neat tricks. For instance, the character sequences Esc[44m and Esc[37m, where Esc is the escape char-

```

program Wipe;
($I-) ($S-) ($R-)

var
  f : file;
  pass : Integer;
  ch : Char;

procedure Stop;
begin
  Writeln('Error wiping file!');
  Halt;
end;

procedure ErrorCheck;
begin
  if IOResult <> 0 then
    Stop;
end;

procedure WipeWith (var f : file;
                    c : Char);

var
  i : LongInt;
  r : Word;
begin
  Reset(f,1); ErrorCheck;
  for i := 1 to FileSize(f) do
    begin
      BlockWrite(f,c,1,r);
      if r <> 1 then
        Stop;
      end;
    Close(f); ErrorCheck;
  end;
begin (Wipe)
  if ParamCount <> 1 then
    begin
      Writeln('Usage:
      Type WIPE <filename>');
      Exit;
    end;
  Write('Are you SURE (Y/N)? ');
  Readln(ch);
  if UpCase(ch) <> 'Y' then
    Halt;
  Randomize;
  Assign(f,ParamStr(1))
  ErrorCheck;
  for pass := 1 to 3 do
    begin
      WipeWith(f,#0);
      WipeWith(f,#1)
    end;
  WipeWith(f,Chr(Random(256)));
  Rename(f,'X'); ErrorCheck;
  Erase(f); ErrorCheck;
  Writeln('Done!')
end.

```

LISTING 1: Wipe secret files from your disk with this Pascal program.

Command	Action
ESC 44;37m	Make the background blue, the foreground white
ESC 12;40H	Move the cursor to row 12, column 40
ESC s	Save the cursor position
ESC u	Restore the saved cursor position
ESC K	Erase to the end of the current line
ESC 5B	Move the cursor down five lines
ESC O;68;"DIR";13p	Make the <F10> key execute the DIR command at the DOS prompt
ESC 63;92p	These two commands, executed in succession, swap the backslash and question mark keys
ESC 92;63p	

TABLE 1: These sample commands show some tricks you or your batch files can do using ESC.COM.

acter (ASCII 27), will change the colors on the DOS command screen, making the background blue and the characters white. You can create some attractive color menus this way.

Unfortunately, special measures are usually required to get the Esc character into a batch file. To solve this problem, I wrote a small utility that makes ANSI.SYS functions available from the DOS command line.

*Richard C. Jones
Throop, Pennsylvania*

Editor's note: The DEBUG script in LISTING 2 creates ESC.COM. Copy the listing to an ASCII text file called ESC.DAT. At the DOS prompt, type DEBUG < ESC.DAT. The file ESC.COM will appear in the current directory. To use ESC.COM, move the file to a directory listed in your PATH command and be sure the command 'DEVICE = C:/DOS/ANSI.SYS' is in your CONFIG.SYS file. TABLE 1 shows a small sampling of things you can do with this program.

Finding Your Place in WordPerfect

As a new convert from *DisplayWrite 4* to *WordPerfect 5.1*, I missed *DisplayWrite's* Paper Clip feature, which allows you to return to the place where you left off when you last saved the document. This feature is important for anyone who has to do a lot of proofreading, especially if it's often interrupted. Consequently, I wrote macros for marking

your place with a "paper clip" and then finding it again.

The first macro, Alt-Z, inserts a character string into the text at the place to which you wish to return. To create this macro, bring up a document and press <Ctrl>-<F10>. At the 'Define macro' prompt, type ALTZ and press <Enter>; for the description, type Set Marker and press <Enter>. The phrase 'Macro Def' will blink in the lower left corner of your screen. To redline the marker and make it more visible, press <Ctrl>-<F8> (Font), followed by the letters A (Appearance) and R (Redline). Enter a "smiley face" character by holding down the <Alt> key as you type 001 on the numeric keypad, then releasing

```

N esc.com
A100
mov BX,80
mov CX,1
mov DX,CX
add CL,[BX]
mov word [BX],5B1B
mov AH,40
xchg DX,BX
int 21
ret

RCX
15
W
Q

```

LISTING 2: Run this script through DEBUG to produce ESC.COM, which lets you easily invoke ANSI.SYS's screen and keyboard functions. There are no uppercase letter O's in this script.



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<Alt>. Now enter a "reversed" smiley face by holding down <Alt> while typing 002 on the numeric pad. Finally, press <Right> once and press <Ctrl>-<F10> to end the macro recording.

The second macro, Alt-X, finds and deletes the marker created by Alt-Z, taking you to the exact place you left before. To create Alt-X, press <Ctrl>-<F10> again, this time naming the macro ALT-X and giving it the description Find Marker. Once you've started recording the macro, press <Home> twice, then <Up> to make sure you're at the top of your document. To find the marker, press <F2> (Search), enter the two smiley faces as above (<Alt>-001 and <Alt>-002), and press <F2> again. To delete the marker and its formatting, press <Delete>, then Y (Yes), and press <Backspace> twice. Finally, press <Ctrl>-<F10> to stop recording the macro.

I always execute Alt-X upon entering any existing document. This avoids the possibility of leaving an unwanted mark in a document.

Berton G. Yeaton, Jr.
Jacksonville, Florida

Supervising DOS 5.0 Swaps

My latest DOS 5.0 discovery lets you speed up task-switching by telling DOSSHELL to swap tasks to a RAM disk (or your fastest hard drive). DOSSHELL looks to a variable called SWAP to see where to put its files, and a simple SET TEMP=E:\TEMPDIR command in your AUTOEXEC.BAT file—assuming TEMPDIR is a directory of your drive E:RAM disk—will do the trick.

A few details can help you understand the process. When DOSSHELL executes a task from the Task Menu, two files are created. The first is a small batch file that contains the commands to run the program; it's named XXXX-DOSC.BAT, where XXXX is an arbitrary string of characters. The second file is written when the task is swapped out. It's called ~DOS100X.TMP, where X is an arbitrary character.

The location of that second file can make a big performance difference. If

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an environment variable called TEMP exists, DOSSHELL uses the drive and directory it indicates. Otherwise, it looks for an environment variable called TMP and uses it as the directory. Finally, if neither variable exists, it uses the DOSSHELL start-up directory—usually C:\DOS.

Be aware, however, that certain other programs, including many Microsoft languages, also use the TEMP and TMP environment variables. You may have to abandon the faster swapping if you have a conflict.

Malcolm Michael
Castro Valley, California

Editor's note: Using a RAM disk for DOSSHELL swaps is a good idea, but beware: Swapped tasks can take up lots of space, so you'll need a very large RAM disk.

A Secret Correction

A lot of readers had problems with the SECRET.SCR listing published on page 303 of our November 1991 issue. The listing was supposed to produce a program that, when run in your AUTOEXEC.BAT file, freezes your system until a password is typed. What we discovered the hard way is that DEBUG's built-in assembler varies from one version of DOS to another. The result: The assembler script produced a

working program with some versions of DEBUG but not with others.

The script in LISTING 3 doesn't use the assembler and therefore will work on any version of DEBUG. As with the original, enter the script into an ASCII text file called SECRET.SCR, then double-check the code for any errors; I recommend checking down the columns rather than across them. Note that there are no occurrences of the uppercase letter O in this file; any character that looks like an O is a zero.

There is one change you should make in the listing: Replace the word 'Password' with your own eight-character, case-sensitive password. Once the file is saved and checked, type DEBUG<SECRET.SCR at the DOS prompt to create SECRET.COM.

We apologize for the confusion.

Have a macro, batch file, short program, or general tip you're proud of? Star-Dot-Star pays \$25 to \$200 per tip used. Send your tips to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Sorry, we cannot acknowledge submitted materials. ☺

Brett Glass is a contributing editor for PC World.

```
N secret.com
E100 BE 48 01 E8 30 00 C6 06 47 01 00 BF 7C 01 B9 08
E110 00 32 E4 CD 16 3A 05 74 04 FE 06 47 01 BE 7A 01
E120 E8 13 00 47 E2 EB BE 6A 01 80 3E 47 01 00 75 01
E130 C3 E8 02 00 EB CA B4 0F CD 10 FC AC 3C 24 74 06
E140 B4 0E CD 10 EB F4 C3 00 00 0A 45 6E 74 65 72 20
E150 38 2D 63 68 61 72 61 63 74 65 72 20 41 63 63 65
E160 73 73 20 43 6F 64 65 3A 20 24 0D 0A 41 63 63 65
E170 73 73 20 64 65 6E 69 65 64 24 2A 24
A17C
DB 'Password'

RCX
84
W
a
```

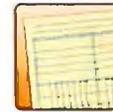
LISTING 3: Run this script (corrected from the one in our November 1991 issue) through DEBUG to produce SECRET.COM, a password protection program.



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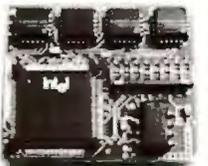
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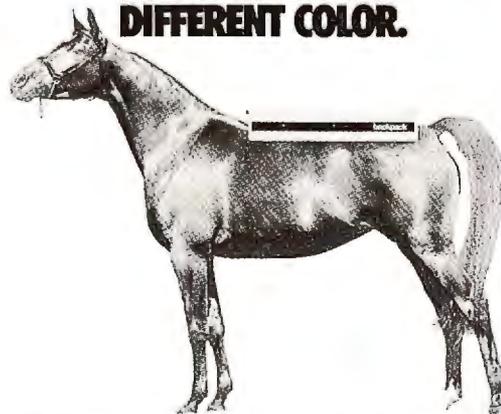
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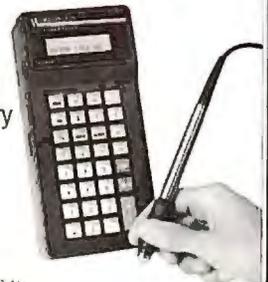


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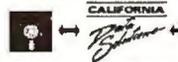
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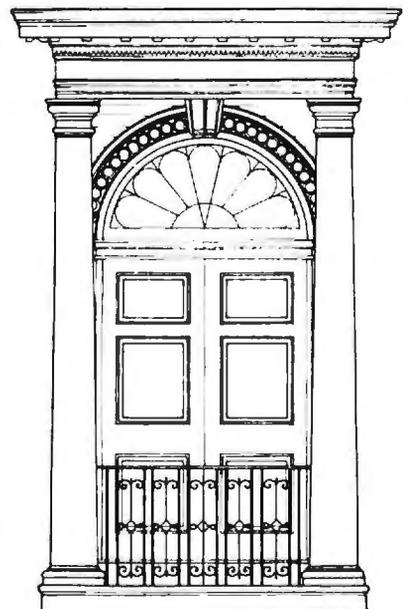
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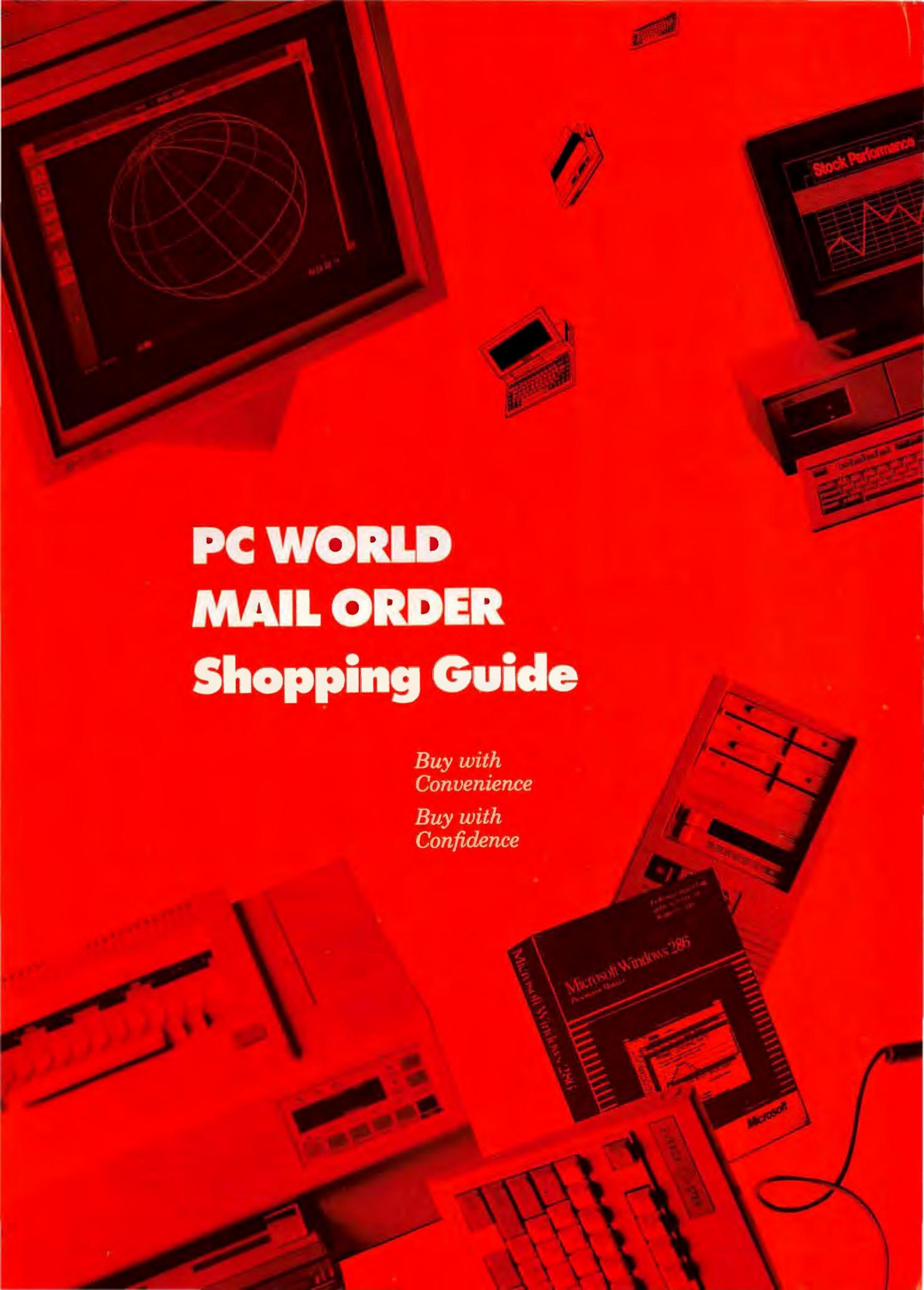
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FastData Power PCs



\$2599 FastData 486/33

If you need the ultimate in 486 power, the FastData 486/33 delivers. A true Intel™ 486-33 processor with integrated coprocessor and 8K internal cache is complemented by a 128K external static RAM cache with burst mode support to deliver 14.7 MIPS of processing power. The system is expandable to 16 megabytes of memory on-board using 1mb SIMMS, thus protecting your investment in existing memory when you're ready to upgrade. The FastMicro team has bundled the 486/33 with four megabytes of memory, a high-speed 200mb IDE hard disk and a 1mb Super VGA adaptor and Non-Interlaced monitor at an attractive price. From networking to publishing to CAD, we have what it takes to make your computer a complete solution.

Standard Features

- ✓ 33mhz Intel 80486 processor with coprocessor.
- ✓ 8K processor & 128K external static RAM cache.
- ✓ 4 megabytes of fast RAM.
- ✓ 200 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Full size or upright (shown) chassis with keylock, speed and reset buttons.
- ✓ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution, with 1mb VGA card.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 230 watt power supply
- ✓ 8 ISA slots, 5 drive bays.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class A approved for business use only.

486/33	80mb	100mb	200mb	340mb
Mono	\$1,929	\$1,999	\$2,249	\$2,649
Mono VGA	\$2,029	\$2,099	\$2,349	\$2,749
VGA 1024i	\$2,229	\$2,299	\$2,549	\$2,949
VGA 1024hi	\$2,279	\$2,349	\$2,599	\$2,999



\$1799 FastData 386/33

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 80 megabyte 20 millisecond hard disk, 1024 by 768 Non-Interlaced Super VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warranty with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes high speed RAM.
- ✓ 105 mb 17ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with speed, keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 200 watt power supply.
- ✓ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution, with 1mb VGA card.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Built-in memory management.
- ✓ MS-DOS 5.0.
- ✓ Windows & Logitech Mouse add \$69.
- ✓ FCC Class B approved.

386/DX33	80mb	100mb	200mb	340mb
Mono	\$1,379	\$1,449	\$1,699	\$2,099
Mono VGA	\$1,479	\$1,549	\$1,799	\$2,199
VGA 1024i	\$1,679	\$1,749	\$1,999	\$2,399
VGA 1024hi	\$1,729	\$1,799	\$2,049	\$2,449



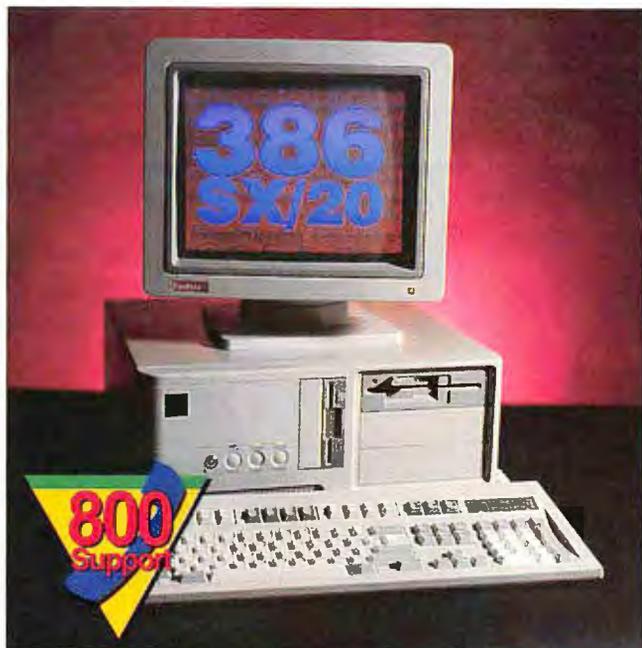
FastData NoteBook

New 80mb SX/20 model!
Call for pricing & specifications.

All FastData Systems Include:

- Toll-Free Technical Assistance for Life
- 'FastSHIP' Advance Parts Replacement
- On-Site Service or System Replacement Should Unusual Problems Arise
- 30 Day Money Back Guarantee
- FastMicro Peace of Mind

FastData SX Systems



\$1399 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just \$200 more than our SX/16, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard, DOS 4.01 or 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 80 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX20	40mb	80mb	100mb	200mb
Mono	\$969	\$1,099	\$1,169	\$1,419
Mono VGA	\$1,069	\$1,199	\$1,269	\$1,519
VGA Color	\$1,219	\$1,349	\$1,419	\$1,669
VGA 1024i	\$1,269	\$1,399	\$1,469	\$1,719



\$1249 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of fast RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard, mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Mono	\$949	\$1,079	\$1,149	\$1,399
Mono VGA	\$1,049	\$1,179	\$1,249	\$1,499
VGA Color	\$1,199	\$1,329	\$1,399	\$1,649
VGA 1024i	\$1,249	\$1,379	\$1,449	\$1,699

FAST MICRO

1-800-821-9000



FastMicro
3655 E. LaSalle St.
Phoenix, AZ 85040
(800)821-9000 (602)437-5700
(602)437-2300 FAX

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DISK DRIVES

- CD-ROM**
 Hitachi Ext. 680mb Kit.....499
 Sony Int. 680mb Kit.....379
 Book of Mammals / Encyclopedia...49/69
 MS Bookshelf, Stat. Pack,
 World Atlas & Consultant CDs.....99
- Colorado**
 DJ-10 40-120mb Int. Tape.....239
 DJ-20 80-240mb Int. Tape.....299
 External Kit.....69

Toshiba 100mb IDE Kit \$369



Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and

built-in 1:1 controller, 16 bit IDE card with dual floppy controller & cables, 3.25" brackets & rails.

- Conner** (see FastData IDE controllers)
 CP3044 40mb IDE 28ms.....199
 CP3104 100mb IDE 25ms.....349
 CP3208 200mb IDE 25ms.....549
- DTC**
 6280 ESDI 16bit HD/FD Cont.....119
 6280-15T 15mb/sec transfer rate....169
- Micropolis** (see DTC Controllers)
 MC1664 345mb HH ESDI 14ms.....999
 MC1568 668mb FH ESDI 14ms.....1399
 MC1598 1gb FH ESDI 14ms.....1999

- Plus Development**
 HardCard IXL 50mb 9 ms 16bit.....299
 HardCard IXL 105mb 9 ms 16bit.....469



Seagate 89mb AT Kit \$319

IDE performance, big 89 megabyte capacity, 19ms access time and 5 mbps transfer rate make this a great

buy. Controller, cables and rails are included to make installation fast and easy.

- Seagate**
 30MB XT Kit ST238 w/ cont.....249
 40MB AT ST251-1 MFM Drive.....229
 40MB AT ST157A 28ms IDE Drive.....179
 89MB ST3096A 19ms IDE Drive.....299
 125MB ST3144A 19ms IDE Drive.....359
 210MB ST1239A 15ms IDE Drive.....599
 330MB ST2383E 16ms ESDI Drive 1199

- Teac**
 1.2MB 5.25" Floppy.....65
 1.44MB 3.5" Floppy.....65



Toshiba 1.44mb Floppy \$59

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add \$5.

- Toshiba**
 360K 5.25" Floppy (Black).....59
 1.2MB 5.25" Floppy.....59
 1.44MB 3.5" Floppy.....59
 107mb 1034 IDE 3.5" drive.....349

- Western Digital**
 WD93044 40mb IDE 28ms.....199
 WDAC280 80mb IDE 20ms.....299
 WDAP4200 200mb IDE 20ms.....599

MODEMS & FAX

- ATI**
 2400 ETC Internal / External.....129/159
 9600 E External MNP V.42bis.....369



ATI \$369 9600ETC-E
 ATI delivers speed and accuracy with the 9600 Etc-E! It includes V.42, LAP-M, and MNP error correction combined with MNP5 and V.42 bis data compression to provide

total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiation with connecting with other modems.

- Everex 2400B Int Modem.....69**
Hayes
 JT FAX 4800B Internal.....139
 Personal Modem 2400 w/Prodigy.....119
 Pocket Edition 2400 Modem.....119
- Intel**
 Classic 2400 Modem Int / Ext.....139/169
 Satisfaction Classic - Int/ 9600.....379
- Practical Peripherals**



OmniLink Laser \$379
 Don't settle for curled-up thermal paper or tie up your PC to receive faxes - get OmniLink Laser. It connects to your phone

line and HP compatible laser and receives and prints your faxes. You can still print anything you want and OmniLink will store up to 30 faxes while your printing. Plus, it's a standard 2400/9600 modem/sendfax and software is only \$89

- 2400B Int Modem Std/MNP.....125 159
 PM9600SA Ext. V.32/V.42bis.....449

- USRobotics**
 2400 Sportster Int / Ext.....119 /135
 2400 Sportster MNP Int / Ext.....159 /189
 9600 Sportster Int / Ext.....399 /449
 Courier HST 14,400 Int. / Ext.539 /579
 Courier HST 14,400 Dual Std Ext.839
 WorldPort 2496 Pocket Modem/Fax .309

- ZOOM**
 HC2400 Internal.....69
 2400 V.42bis External Modem.....129
 9624 Send/Receive Int Fax Modem .109

MICE & INPUT

- Key Tronic 101 Keyboard.....59**
 Professional Mouse.....59

- Logitech**
 Mouseman Serial righthand.....59
 Mouseman Serial with Windows.....109
 Mouseman Bus righthand.....65
 Mouseman Cordless.....85
 ScanMan 32.....159
 ScanMan 32 with Catchword.....199
 ScanMan 256 for Windows.....279
 Trackman Serial.....65



Microsoft Mouse \$83
 Ergonomic design and 400 DPI accuracy make this the world's most popular mouse. Microsoft design and mouse utilities assure compatibility with the programs you use most.

- Microsoft**
 Serial or Bus Mouse only.....83
 Serial or Bus with paint.....95
 Serial with Windows.....147
Z-Nix Super Mouse II w/Windows.....79



NETWORKING

- Artisoft/Lantastic**
 Lantastic 2 Station Starter Kit:.....349
 2 Mbps.....469
 Ethernet.....269
 Ethernet Additional Stations.....209
- Eagle**
 NE2000 2 Station NW Lite Kit.....459
 FastData NE2000 16 bit 10-BaseT.....109
- Novell**
 Network Lite.....65

FASTDATA PRODUCTS

FastData 16 Bit VGA
\$59 \$69
 The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

FastData 16bit 1mb VGA.....89
 FastData CGA Card.....35
 FastData MGP Card.....29

FastData Monitors
 Your best value, guaranteed! We have a full line manufactured for us by manufacturers like Hyundai and Matsushita. As with all FastData branded product, you get a full 30-day money back satisfaction guarantee. Shown is the VGA color.

- ## BOARDS & CHIPS
- AdLib Gold 1000/2000.....185 /285
 ATI Stereo F/X.....129
- Creative Labs**
 Sound Blaster.....109
 Sound Blaster Pro (stereo & MIDI).....189
 Cyrix 387-DX25 / 33.....179 /195
 387-SX16 / 20.....115 /129
- Everex**
 RAM3000 16 bit - w/ OK (max 3mb).....75
 RAM3000 16 bit - w/ 1mb.....125
 RAM8000 16 bit - w/ OK (max 8 mb).....169
 RAM8000 16 bit - w/ 2mb.....269
- Intel 287XL.....85**
 387-DX25 or 33.....209
 387-SX16 / 20.....129 /139
- Memory - 1mb SIMMS 80ns.....49**
Memory - 1mb chips 80ns set of 9.....59

- FastData Boards**
 9600B SendFax w/ 2400B Modem.....79
 9600B Send/Receive Fax w/2400B.....99
 Ethernet 16bit 10Base-T.....109
 IDE 16 Bit 1:1 Hard/Floppy Disk Cont.....29
 IDE HD/FD w/Par2 Serial/Game.....39
 Parallel/2 Serial/Game Card.....29
 XT 1.44 Dual Floppy Controller.....35

FastData 2400 Baud Modem
\$49
 The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

FastData Monitors
 14" Amber or White Monochrome.....99
 14" White VGA Monochrome.....119
 14" CGA Color. 52 dot pitch.....199
 14" Super VGA 1024 x 768. 28 dp.....299
 14" Non-Int VGA 1024 x 768 .28 dp.....369

VIDEO & MONITORS

- ATI**
 Graphics Vantage 1mb.....389
 VGA Basic 16 / Integra.....75 /129
 VGA Wonder XL 256K / 1mb.....169 /229
 8514 Ultra 8514+VGA 1mb.....599
- Diamond**
 SpeedStar Plus HiColor 1mb.....189
 Stealth VRAM HiColor 1mb.....265
- Everex EGA 480 Card.....69**
FastData Monitors & Cards...see above
Hercules Graphic Card +.....Call
MAG Colorview/15.....Call
Mitsubishi
 1410 EGA.....325
 Diamond Scan 1381.....499
 Diamond Scan 16L.....919
- NEC**
 Multisync GS 2a.....199
 Multisync 3FGX.....599
 Multisync 4FG.....749
- Orchid**
 ProDesigner IIs 1mb.....219
 Fahrenheit 1280s H.Color.....319
- Panasonic C1381 VGA.....369**
Seiko CM1440 /CM1450.....489 /569
Sony 1304 Multiscan.....599
- Video 7**
 VGA 1024i 256K / 512K.....129 /149
 V-RAM II VGA 512K / 1mb.....249 /319
- Zenith 1492.....599**

Sound Blaster \$109
 Sound Blaster does for sound what VGA does for graphics! Supported by the largest software library, Sound Blaster make your games come to life. Also includes a music synthesizer, voice input and sound compression, and MIDI interface. SB Talker even converts text into spoken English. Includes a game port also.

PRINTERS

- Canon**
 BJ10XE Portable.....319
 BJ300 / BJ330 Ink Jet.....459 / 599
 LBP-4 Laser.....799
- Citizen**
 200GX 9 Pin.....159
 GSX-130 24 Pin.....249
 GSX140 24 Pin.....299
 GSX145 24 Pin Wide.....395
 PN48 Std / Pro.....299 / 329
- NEC**
 P3200 24 Pin.....269
 P3300 24 Pin Wide.....369
 P6200 / 6300.....469 / 629
 Silentwriter 2 Model 90.....1550
- Okidata**
 Okilaser 400.....669

Panasonic 1124i \$299

The Panasonic KX-P1124i is the ideal high-end 24 pin printer at a low-end price. It features up to 300 cps speed, 8 letter-quality fonts, 10 pitch selections and more. It features an EZ set operator panel and LCD display to make changing settings a breeze. It includes a two-year warranty too!



- Panasonic**
 KXP1180 9 Pin.....155
 KXP1123 24 Pin.....239
 KXP1124i 24 Pin.....289
 KXP1624 24 Pin Wide.....369
 KXP2624 24 Pin Quiet.....459
 KXP4420 Laser.....699
 KXP4450i / 4455 Lasers.....Call
- Seiko Smart Label Printer Plus.....167**
- Star**
 NX1001.....149
 NX2410 / 2415.....239 / 369
 XB2410 / 2415.....419 / 539
- Texas Instruments**
 Microlaser PS17.....1199
 Microlaser PS35.....1499



FastData 286/12 \$699

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Key Tronic keyboard. And since it's a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms IDE hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$59)
- ✓ Standard chassis (shown)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Math coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, game port, & 2 serial ports.
- ✓ Key Tronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ MS-DOS 5.0.
- ✓ Full documentation.
- ✓ FCC Class B approved.

	40mb	80mb	100mb	200mb
286/12	\$699	\$829	\$899	\$1,149
286/12i	\$799	\$929	\$999	\$1,249
286/12i+	\$949	\$1,079	\$1,149	\$1,399
286/12i+2	\$999	\$1,129	\$1,199	\$1,449

DATABASE & FORMS

askSam 5.0	209
Clarion Personal Developer	45
Clarion Professional Developer	449
Clipper 5.01	489
DataEase	509
dBase III+	419
dBase IV	449
dBXL Diamond	129
Formbase	299
FormTool Gold	52
Formfiller	79
Foxbase Plus	179
FoxPro 2.0	449
Paradox 3.5	449
Paradox Competitive Upgrade	165
Paradox SE	65
Per:Form Designer & Filler	89
Personal Rbase	79
Q & A 4.0	249
RapidFile	99
Rbase for DOS	447
Reflex	159

Paradox SE \$65

New Paradox SE is a special version of the award-winning database management software designed especially for small business and home use. Just enter your data and Paradox SE lets you query, graph, sort, even write reports and form letters. Easy to use and learn, you can create multi-table date-entry applications without programming.



ENTERTAINMENT

Carmen SanDiego Deluxe Edition	45
F-19 Stealth Fighter	38
King's Quest 5 (VGA Vers.)	38
Leisure Suit Larry III	35
Microsoft Flight Simulator	38
Aircraft & Scenery Designer	27
PC Globe or PC USA	35
Simcity	28
SimEarth	39
Wing Commander I / II	39 / 45

WINDOWS SOFTWARE

3-D Charts to Go for Windows	55
ACCPAC Simply Acctg for Windows	119
Adobe Illustrator	299
Adobe Streamline	119
Adobe Type Sets	Call
Adobe Type Align	59
Adobe Type Manager	59
Adobe Type Manager Plus Pack	115
After Dark for Windows	25
Ami Pro 2.0	279
Ami Pro 2.0 Competitive Upgrade	119
Asymetrix Toolkit	279



Microsoft Office \$447

This special bundle includes the leading Windows applications, Excel, Word and PowerPoint all in one. Excel is the tops rated graphical spreadsheet, Word is the #1 selling Windows word processor and PowerPoint is the top presentation package. Act now and you will save half the cost if purchased separately.

BeckerTools Plus	Call
Bitstream Facelift	57
Corel Draw 2.0	349
Correct Grammar	57
Current	119
DBlast/Windows	239
DynaComm 3.0 Async	139
Excel	299
Facelift	57
Form Publisher	139
Grammatik IV for Windows	55
HDC First Apps or Windows Express	55
Instant Orgharl!	119

1-2-3 & Ami Pro Double Upgrade \$139 wow!

Lotus users! This upgrade includes the hot new 1-2-3 for Windows and the new Ami Pro 2.0. 1-2-3/W includes SmartIcons, 3-D charting, true 3-D worksheets, and database links. Use Windows pull-down menus or press slash and Classic 1-2-3 menus appear. Ami Pro 2.0 is the new version of the award-winning Windows word processor. It includes new customizable SmartIcons, 1-2-3 data exchange, outlining, style sheets, revision marking, and more.

JustWrite	129
Lotus 1-2-3 for Windows	379
Lotus 1-2-3 Competitive Upgrade	119
Micrographix Designer	449



DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II	239
Bannermania	21
Express Publisher	Call
Microsoft Publisher for Windows	129
Pagemaker 4.0	489

Microsoft \$129 Publisher

New Microsoft Publisher for Windows gives you easy-to-use page layout, text, and graphics tools to create publications quickly. It includes a built-in word processor with spell checker and import text from any major word processor. Also includes PageWizards - step by step publication creation, WordArt - text special effects, and Toolbar - access to frequently used functions are a click away. Also comes with 100+ clip art images, border art, drawing tools & more.



PFS:First Publisher	89
Printshop	33
Publisher's Paintbrush	279
Publish It!	129
Ventura Publisher Gold / Windows	499

FINANCIAL

ACCPAC BPI Value Pak	359
Bedford Integrated Acct.	119
Checkfree	19
DAC Accounting 4.2	85
DAC Bonus Pack 4.2	127
Dollars & Sense	39
Managing Your Money	109
Microsoft Money for Windows	45
Money Matters	29
One Write Plus G/L, A/P & A/R	165
Pacioli 2000	29
Peachtree Crystal Acctg. Windows	175
Peachtree Complete III	139
Peachtree with Data Query	209
Quicken	41
The Manager's Organizer	139
Timeslips III	179
Wealth Builder	89

Windows 3.0 \$89



Get in on the Windows revolution! Windows turns your 286 or above into a powerful multitasking workstation that runs even non-Windows applications. Includes many integrated applications standard. Plus, if you buy Windows from FastMicro, we'll throw in 12 of the best Windows shareware programs free!

MicroPhone II	89
Microsoft Ent. Pack I, II, or III	27
Microsoft Mouse w/ Windows 3.0	147
Microsoft Office (Word/Excel/Powerpoint)	447
Microsoft Powerpoint for Windows	309
Microsoft Productivity Pack	39
Microsoft Windows	89
Microsoft Windows Developer's Kit	309
Microsoft Word for Windows	299
M.Y.O.B.	129
Norton Backup	85
Norton Desktop	95
ObjectVision for Windows	89
On Target	229
PackRat 3.0	239



AfterDark \$25

Save your screen with over 35 incredible displays-Aquatic Realm, Flying Toasters, Logo, Messages, Multimedia or create your own screen saving art. SystemIQ™ maximizes performance while running After Dark. Also features DOS blanking and two-level password protection, and sound! It includes a programmable quick-sleep hot key and total network compatibility.

Pagemaker 4.0	489
Persuasion	319
Per-Form Pro	179
PFS:WindowWorks	119
Pro Write Plus	159
Project for Windows	429
Publisher's Powerpak	45
Publisher's Paintbrush	279
Quattro Pro for Windows	Call
RightWriter for Windows	Call
SuperBase 4	419
Turbo Pascal for Windows	119
Ventura Publisher	519
WideAngle for Windows	62
Winconnect	59
Windows Draw	145
WinFax Pro	69



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GRAPHICS

Autosketch 3.0	139
Corel Draw 2.0	349
Design CADD 3-D	185
DrawPerfect	259
Freelance Graphics 4.0	299
Freelance Competitive Upgrade	89
Generic 3D Drafting	199
Generic Cadd Level 2 Starter Kit	89
Generic Cadd 5.0	279
Harvard Graphics	Call
PC Paintbrush IV Plus	109

PC Tools \$99 Deluxe 7.0

New PC Tools 7.0 is the perfect set of utilities for DOS 5. Includes new application menu system, remote operation of another PC, advanced data recovery and an enhanced Backup in DOS and Windows versions. Anti-Virus, which recognizes over 400 known viruses and even detects unknown ones is included as a free bonus.



INTEGRATED

First Choice	95
Framework XE	95
Geoworks Ensemble	115
LotusWorks	89
SmartWare II	417
Symphony 2.2	489
Works	89
Works w/ MS Serial Mouse	149

PROGRAMMING

Borland C++	299
Borland ObjectVision for Windows	89
Turbo Pascal Dos/Windows	90/119
Macro Assembler	95
Microsoft C Compiler	303
Quick Basic	60
Quick C or Quick Pascal	60
Visual Basic for Windows	125
Windows Developer's Kit	309

SPREADSHEETS

Always	115
Excel for Windows	299
Lotus 1-2-3 version 3.1	325
Lotus 1-2-3 version 3.1+	399
Lotus Upgrades	Call

Lotus 1-2-3 2.3 \$325

The powerful spreadsheet that runs on any PC. New WYSIWYG display, mouse support, 200 graph types, drawing tools and other graphics features to make spreadsheet publishing a breeze. Release 2.3 also adds auto-compress printing, auditor, file viewer, context sensitive help, print preview and more. Call us for upgrade information too!



Quattro Pro 3.0	289
Quattro Pro 3.0 Comp. Upgrade	89
Quattro Pro 3.0 SE	45
Supercalc 5.1	89

WORD PROCESSORS

Facelift for WordPerfect	57
Grammatik IV	55
LetterPerfect	119
Multimate 4.0	267
Professional Write	159
Publisher's Powerpak / WordPerfect	45

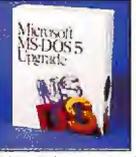
WordPerfect 5.1 \$239

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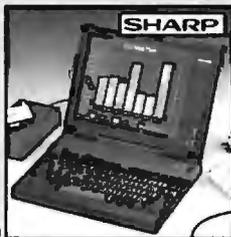
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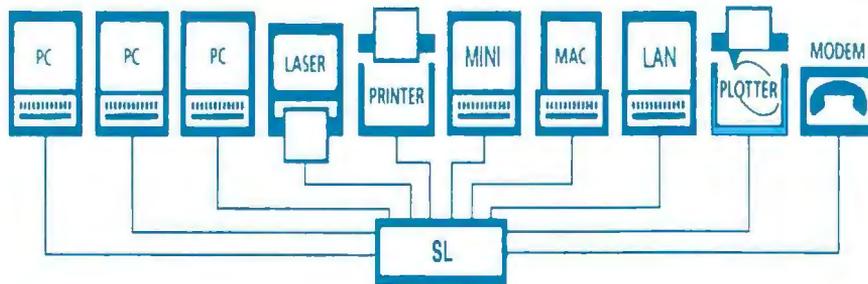
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Pinnacle Micro REO-650 650-MB removable w/mtf	3599

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Animator from Autodesk (WHILE SUPPLIES LAST)	595
Grasp 4.0 from Paul Mac	139
Multimedia Explorer from Autodesk	
Computer Digital Sound, Radio & Audio Editing	199
Sound Blaster / Sound Blaster Pro audio card	144/249
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ProAudio Spectrum sound board from Media Vision	279
NISC Frame Grabbers / NISC Digitizers	
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Computer Eyes RT	479
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VIDEO PUBLISHER: Color 16-bit color realtime	695
NISC Encoders / Decoders / Genlock / Overlays	
Everex Vision VGA w/Overlay 1-MB	1629
Jovian GENIE professional scan converter (external)	1295
Jovian VIM Plus NISC encoder (external unit)	344
MAGNI VGA Producer VGA, Video in/out/overlay	1475
Willow VGA-TV GE/O (w/Video Tiler s/w)	635
Video Tiling Software — broadcast quality tiling	1995
Video Tiler by Entropy Engineering	1365
New Media Graphics - Windows video for MS Windows	
Super Video Windows Board software	1995
Super Video Windows Tuner Board (for TV input)	295

Video Monitors & Controllers

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MF-5221 21" flat screen color, 1600 x 1200, 31mm	2411
MF-5421 21" flat screen color, 1600 x 1200, 26mm	2799

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VIKING two-page hi-res DTP monitor systems	
Viking 391M 23" monitor & controller	1139
Viking 391GS 23" 4/8-bit grayscale monitor & contr	1999
Viking 32400M 24" monitor & controller	1999

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OmniPage 386 Professional by Camra (trainable)	639
ReadRight for Windows / ReadRight v7.01 (DOS)	295 / 299
Scanner Software for Image Manipulation & Editing	
Gray Fix by Xerox: Windows/IMD application	1295
Halo Desktop Imager by Media Cybernetics	99
IMAGE-IN COLOR (works with WACOM tablets)	695
PhotoStyler by Aldus v1	519
Picture Publisher Plus by Astral/Micrografix	469
Publisher's Paintbrush for Windows by Z-Soft	285
Tempra Pro by Mathematica (DOS application 24-bit)	345
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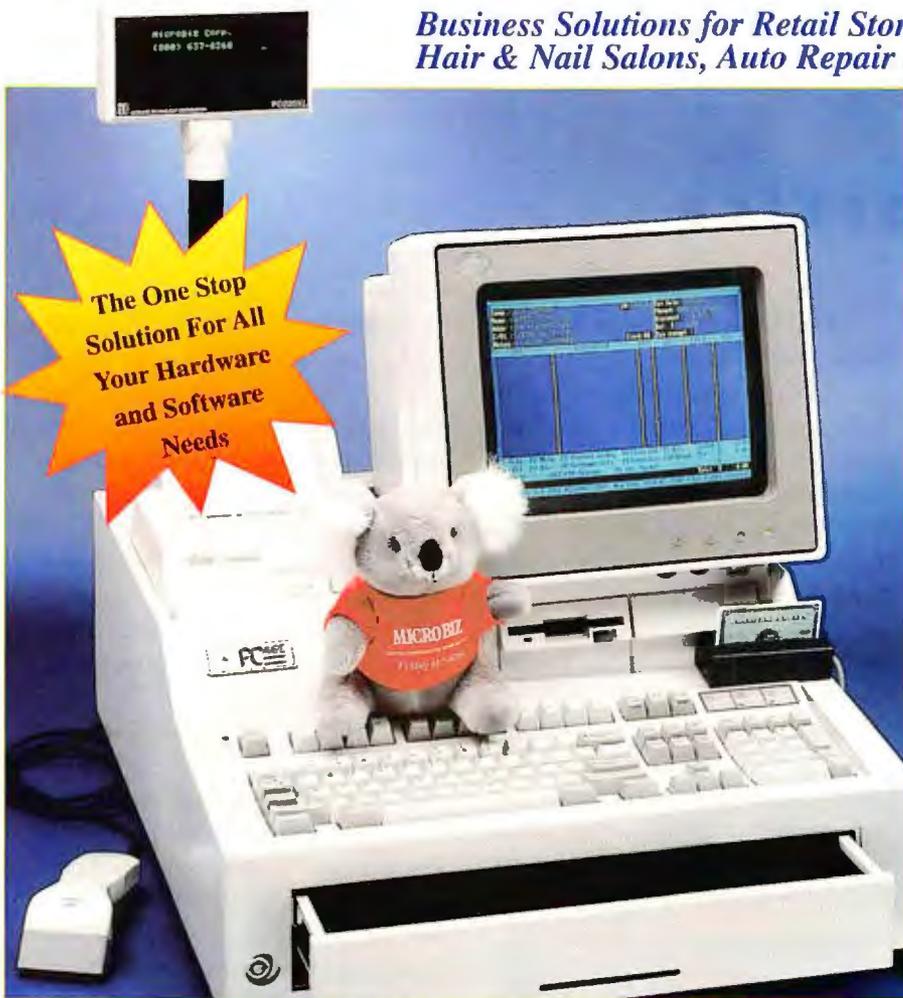
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THE HOME OFFICE

The practical guide to home/office computing

Steve Bass

It's always a treat to see the UPS truck pull up in front of my house—especially if I'm expecting a new computer or components. Buying through the mail involves some risk, but you can reduce that to about the same level as buying from a computer store, provided you take a few simple precautions before and after purchase.

Since you won't get to touch your purchase beforehand, you'll need to temper your enthusiasm for a new PC with cold calculations. Draw up the specs for your base configuration, know your top price, and research brands carefully. There's no rush. One thing you can always rely on: Everything will be cheaper tomorrow...and cheaper still the day after.

Narrow your list of prospects using ads in computer magazines, and be ready to make extensive phone calls to fill in the gaps. Many people take notes with a word processor, but a spreadsheet jockey in our user group helped me build a *Quattro Pro* spreadsheet to use as a checklist of component specs, company policies, prices, and recommendations. You can get my worksheet free off the PIBMUG BBS listed below.

I started by listing PCs in columns

along the top and the specs for every component in separate rows down the left side. For example, my hard drive had to be at least 200MB running at a fast 15ms. I also wanted to know who manufactured it. You should incorporate every detail: monitor dot pitch, video memory, CPU speed, DOS and BIOS version numbers. If you're able, give each a numerical weight in keeping with its value to you, and add up the scores at the end.

Looking at the fine print in a gazillion magazine ads raises other questions. Mail-order companies reveal (or don't reveal) a lot about their policies in that small print. You'll need rows to record



information about support (is there an 800 number? 24-hour service?), on-site service, return/refund policies, and restocking fees.

I call companies three or more times to ask a variety of questions, including some for tech support. I gather recommendations from colleagues but also ask companies for referrals. While predicting a firm's financial future is hard, profitability and length of time in business give some indication. If a voice-mail message suggests that you "press 1 for Chapter 11 status," keep shopping.

Finally, think about your unique requirements as well as your future needs: Will the system board accept only memory upgrades purchased from the mail-order firm? Can you subtract components—a keyboard, for example—and reduce the cost?

When you're ready to order, ask whether the product is in stock, and get a firm shipping date before committing. For leverage in case of disputes, pay by credit card.

Thoroughly check your system *immediately* after it arrives, and burn it in for at least 72 hours to decrease the chance of getting burned yourself. *QAPlus*—a commercial program Northgate Computer throws in for free—lets you burn in every nook and cranny of your computer. The \$15 shareware program *BurnIn* is just as thorough. Run one of them again just before your warranty expires.

Buying by mail-order doesn't have to mean buying a risky, no-name clone from a Midwest garage. Today, you can get brand-name quality plus good service and support for a surprisingly low price—if you shop right. ●

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

Steve's Mail-Order Worksheet PIBMUG; 818/332-6580 (BBS)

BURNIN43.ZIP \$15; George Campbell; 805/528-3753 (BBS)
Reader service no. 617

QAPlus \$159.95; DiagSoft, Inc.; 408/438-8247
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For more information about all products in this article, circle reader service no. 901.

7 NOTEBOOK USERS WERE LOCKED IN A ROOM. LESS THAN 4 HOURS LATER, 6 OF THEM WERE DEAD.

OK, we didn't really lock anybody up. But an independent laboratory did run *PC Magazine's* Battery Rundown Test on 7 leading notebook computers. And we're happy to report that Dell came in dead last.

In fact, Dell's power management system and NiMH battery helped the 320N+ run a full 30 minutes longer than the nearest competitor. More than enough to get you through the next marathon meeting or epic plane flight.

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Dell 320N+	4:00 Hours
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TI Travelmate 3000	2:32 Hours
Zenith MastersPort 386SL	2:26 Hours
AST Premium Exec	2:08 Hours
IBM PS/2 Model L40SX	1:55 Hours

Test in accordance with PC Magazine's testing parameters.

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Toshiba T2000SXe—4 MB RAM and 60 MB Disk Drive	\$4,178
Compaq LTE 386s/20—4 MB RAM and 60 MB Disk Drive [†]	\$4,297
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Zenith MastersPort 386SL—4 MB RAM and 60 MB Disk Drive	\$4,798
AST Premium Exec.—4 MB RAM and 80 MB Disk Drive	\$3,295*
IBM PS/2 Model L40SX—4 MB RAM and 60 MB Disk Drive	\$4,545

*4 MB and 60 MB Disk Drive retails for \$400 more. Go figure.

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Dell 320N+ 20 MHz i386SX System Lease[†]: \$112/MO.** 6.8 lbs 8 1/2 x 11" footprint Full-travel keyboard 4 hour battery life on NiMH battery System includes 60 MB Hard Drive, VGA Edgelit LCD, 4 MB RAM 80 MB Hard Drive also available

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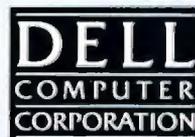
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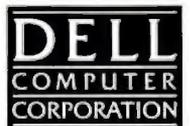
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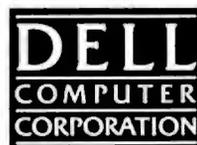
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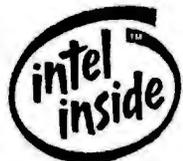
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